THE AMERICAN
School Board Journal

A PERIODICAL OF SCHOOL ADMINISTRATION

Devoted to the Interests of School Boards, Superintendents,
School-Business Officials, and School Architects

VOLUME 118
JANUARY-JUNE, 1949

THE BRUCE PUBLISHING COMPANY
NEW YORK MILWAUKEE CHICAGO

INDEX TO TITLES AND AUTHORS

Volume 118—January to June, 1949

Abbreviations: (Ed.) Editorial; (N) News

THE AMERICAN
School Board Journal

A PERIODICAL OF SCHOOL ADMINISTRATION

IN THIS ISSUE:

VOLUME 118, NUMBER 1 JANUARY

THE AMERICAN
School Board Journal

A Periodical of School Administration

Published on the first day of the month by
THE BRUCE PUBLISHING COMPANY
540 No. Milwaukee Street, Milwaukee 1, Wis.

CENTRAL OFFICE: 20 NORTH WACKER DRIVE, CHICAGO 6, ILL.
EASTERN OFFICE: 330 WEST 42ND STREET, NEW YORK 18, N. Y.

VOL. 118, NO. 1 JANUARY, 1949

TABLE OF CONTENTS

SUBSCRIPTIONS. — In the United States and Possessions, $3.00 per year. In Canada and countries of the Pan American Union, $3.00. In Foreign Countries, $3.50. Single copies, not more than three months old, 35 cents; more than three months old, 50 cents. Sample copies, 35 cents.
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EDITORIAL MATERIAL. — Manuscripts and photographs bearing on school administration, superintendence, school architecture, and related topics are solicited and will be paid for upon publication. Contributions should be mailed to Milwaukee direct, and should be accompanied by stamps for return, if unavailable. Open letters to the editor must in all cases contain the name and address of the writer, not necessarily for publication, but as evidence of good faith.
The contents of this issue are listed in the "Education Index."

A Big Job in 1949

The schoolhousing situation at the beginning of 1949 confronts school administrators with their foremost critical problem. All the factors which underlie and continually influence school building are very active, principally the increase in school enrollments, shifting school populations, reorganization and consolidation of school districts, fires, and obsolescence of school buildings. In addition, changes in the educational program involving new curriculum offerings and teaching methods, more attention to pupil health and comfort, recreational and community services, and especially the high labor and material costs, present most difficult problems in providing satisfactory schoolhousing facilities.

General over-all construction costs will probably average higher than during the past year, and the general construction cost level will unquestionably apply to schoolhousing during 1949. High schoolhousing costs result not only from the present high price levels for building construction, but also because of the new facilities now essential in elementary and high schools to carry on the new curriculum offerings and the health and comfort services.

The determining factor for school building construction under these conditions must be the urgency of the schoolhousing requirements. The most careful planning is called for, based on a keen understanding of the educational needs and requirements of the community. Qualified professional services in planning the school building, co-operation of the manufacturer and distributor for specification and use of the building materials and equipment under the directives of top management in school administration — boards of education and their superintendents — offer the most effective way of meeting these critical school building problems.

JOHN J. KRILL

THE AMERICAN
School Board Journal

Volume 118, No. 1 JANUARY, 1949 Subscription, $3.00 the Year

Relations Between City Planning and School Plant Planning

*Russell A. Holy**

Intelligent city planning and school plant planning are necessarily intimately related. Neither city planning nor school building planning can be considered adequate unless each considers the other. City planning that does not consider the community's need for school buildings omits what should be among its major concerns. A school building program that is not conceived in terms of the anticipated development of the city as a whole is likely to be without a sound foundation. It is futile to keep a fixed school building program where the development of the other aspects of the physical city are not controlled by a plan.

An examination of recent city planning schemes seems to indicate that the problems considered fall within the following main categories: major streets, transportation, transit, zoning, civic art, and public recreation. Each of these essential elements has important implications for school building planning.

Major Street System and School Plant

The heavy street traffic on city streets renders the relation of school buildings to the main streets an outstanding consideration in the selection of sites. It is desirable that attendance districts be bounded by main thoroughfares. It is furthermore desirable that elementary schools be removed from the main streets since such locations are dangerous to elementary school children. The location of junior and senior high schools with reference to major streets and thoroughfares is not so important as that of elementary schools since the older pupils are more able to take care of themselves.

Without a plan for the further development of the city streets the board of education is seriously handicapped in the matter of the selection of sites. Such a plan constitutes the skeleton upon which the city is built. The school plant program can best be developed when those who are responsible for carrying it forward are fully aware of the character of the present highways and also their probable future development. To this end there must be cooperation of the highest type between city planning commissions and school officials. Failure on the part of the school authorities to know in advance where major streets are to be located, results in buildings that are situated either on main thoroughfares or on such sites that it is necessary for the children to cross heavily traveled streets on their trips between school and home.

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School Plant and Transportation Lines

Areas bordering railroads are undesirable for school locations for three reasons: (1) Such areas are hazardous to pupils, especially to small children. (2) The noises in such areas are disturbing to pupils and teachers alike. (3) Finally, such areas are usually adjacent to commercial and industrial plants, creating an environment unfavorable for school children.

School districts should therefore be bounded rather than divided by transportation lines. School buildings should not be closely adjacent to railroad tracks. Information concerning future probable developments of railroad and other transportation lines is essential to school building planning. Such information should constitute one of the main considerations in drawing up a school building program.

Transit Lines in Relation to School Planning

The routing of rapid transit lines, which includes street cars, bus lines, and subways, is an important part of the city plan. Since elementary schools should be located to serve a radius of one-half mile, it is unnecessary to consider transportation facilities for the use of grade pupils. What has been said in connection with transportation lines, of course, also holds here. Schools should not be located adjacent to street car or bus lines. In the selection of sites for junior and senior high schools transit facilities are, however, an important consideration. Sometimes the distance between school and home is too great for high school pupils to walk, so that it is necessary for them to make use of transit facilities. A knowledge of where transit lines are to operate is information which high school officials must have in order to properly locate junior and senior high schools. Transit lines from residential districts should continue within reasonable distance of the school.

Zoning and School Plant Planning

A further consideration in the selection of school sites is the use to which the surrounding area is put. In so far as possible, schools should be located only in residential areas, for it is generally objectionable to have them situated in business or commercial districts on account of the distracting noises and the dust and smoke that permeate the air in these neighborhoods.

The shift of population from one area to the other, the expansion of the boundaries of a city, and the tendency toward blighting districts where there is no legal check on the uses an individual may make of his land, render legal regulation of the territory of the city a necessary condition for a sound school building program. Such regulation constitutes zoning. Among the principal objectives of municipal zoning is the stabilization of residential areas. Zoning is of particular importance in the location of school buildings in areas of future development. If school officials know that a certain section is to become residential, business, or industrial in character, it will be a decided advantage in the choosing of school sites. The lack of such knowledge leaves long-term planning of a school-building program without a basis.

Proper zoning also prevents the "blighting" of areas, an occurrence which means loss of confidence in districts that were originally planned for residential, business, or industrial sections. If a garage or a factory is permitted to be erected within a school district, the district is said to be "blighted," and the school begins to become depopulated. Whenever such a condition as this arises, either the school must

be abandoned eventually, or it must go on serving a decreased enrollment.

Zoning is thus definitely tied up with the development of the school plant. When a city does not have a well worked out zoning plan, it is difficult for the school system to expand normally. Those systems situated in well-planned zoned cities have a distinct advantage for favorable development over those found where no zone plan exists. The entire problem of zoning is so closely interrelated with efficient school planning that to secure the most satisfactory results, the two must be co-ordinated.

Civic Art and the School Plant

City planning is among other things a problem of art. Everytime anyone erects a building, puts up a signboard, or plants a tree, he is either adding to the beauty of the city or detracting from it. Because school buildings constitute a large portion of public buildings and because they are permanent features of a city, their location and design have a marked effect upon community beauty. On the other hand the beauty of school buildings depends on their proper selection with regard to physical environment. In planning the city and the schools the contribution of each to the beauty of the other is important.

The beauty and architectural design of the schools have an influence on the pupils. Besides, school buildings that are beautifully designed and placed on commodious sites in attractive environments add to the dignity of public education and to the civic interest therein. It should not be forgotten, however, that the presence of a good school in a poor neighborhood often tends to raise the aesthetic and civic status of such an area.

The location of school plants is of equal concern to the city planner and the school planner when considered from the aesthetic point of view alone. The attention given to the design and beauty of school buildings and to the landscaping of the grounds in the past quarter of a century or so is commendable. But to secure the most pleasing results aesthetically, the necessity for co-ordinating the school building plan with the aspects of the city plan should not be overlooked.

School Playgrounds and Other Recreational Grounds

Public playgrounds, parks, and school buildings have been located only too often quite without reference to one another. In the light of recent changes in the theoretical bases of these three types of public facilities, they — school, park, and playground planning — are becoming intimately related. Playgrounds and parks are considered necessary for educational purposes.

It is in the interest of economy, education, and sound city planning that school plots, playgrounds, and parks be considered jointly. Frequently a school ground can be combined to good advantage with a park or a municipal playground. Proper co-operation between city park departments and school authorities will facilitate greater recreational accommodations for both children and adults. School playgrounds, like school buildings, should be planned for wider use. It should be recognized that school playgrounds should not be sacredly set aside for a few hours a day, and denied the opportunity for service during vacation periods and after school hours. If our cities are to become more desirable places in which to live, educational and recreational facilities must be advanced hand in hand. The betterment of both in the light of their relationship is the obvious aim of the city and regional planners.

In spite of the need for an intimate relationship between city planning boards and school plant planning, there has been but little effort to co-ordinate the two activities. This lack of co-ordination has resulted in frequent and costly mistakes. Inasmuch as city planning and school plant planning are interrelated at so many points, they should be advanced concurrently at all times. The school plant program should be a definite part of the city plan, and its treatment should be adequate from the point of view of the educator. The organized planning of the future will undoubtedly deal more and more in the relationship of urban communities to suburban and rural areas. It will be necessary for the geographer, the political scientist, the educator, and representatives of other groups to co-operate to secure the desired ends. Inasmuch as city planning and school planning have ultimately a common goal which is the welfare and betterment of the community and its citizenry, city planning officials and school authorities should co-operate at all times for the most satisfactory results.

Severe School-Building Shortages in New York State

Dr. Don Essex Reports Huge Needs

Shortages and deferred repair needs of the public school plants of New York State are estimated by Dr. Don Essex, director of the Division of School Buildings and Grounds, Albany, to be 1799 projects, to cost $1,338,445,788 for the period ending September, 1956.

In September, 1948, Dr. Essex conducted a state-wide survey of the existing situation and received replies from 653 school districts, or 90 per cent of all school areas, of the state. The survey included (1) buildings or additions needed before September, 1950, and (2) buildings or additions needed between September, 1950, and September, 1956. The total of both time periods represented a huge number of projects and the vast outlay of funds mentioned above.

The immediate units for construction to be completed before September, 1950, as shown in the survey, embraces 614 projects, estimated to cost $554,284,902. These 614 projects are needed in addition to 127 building projects costing $76,622,962 already under construction. Of these 127 projects, 87 are under way in New York City.

The extensive needs represented in the survey are the result of (1) the destruction of buildings by fire; (2) obsolescence and depreciation; (3) increased enrollments; (4) shifts in population; and (5) improvements and extension of the educational program requiring additional space. The situation is further aggravated by the fact that there had been some accumulation of units extending back to 1940 and even through the depression era. Extreme high costs of building construction, accompanied by shortages of materials and construction labor are also responsible. In New York State, building construction contracts have recently ranged between 80 cents and $1.20 per cubic foot. There is finally the tremendous rise in the birth rate as a cause of elementary shortages in many communities.

The New York schools are suffering in part also from substandard conditions which have resulted in part-time sessions for 45,000 pupils, the use of 63,500 substandard rooms in basements and attics, and 14,000 elementary classrooms enrolling more than 30 pupils.

A dramatic example of the increase in school enrollments is described by Dr. Essex as existing in a small common school district outside New York City. This district operated for some years a 3-teacher building which served all its needs and purposes. At present, a gigantic residential development is under way, and the area of this rural community will become an urban center within two or three years, and will be obliged to erect school buildings costing several million dollars.

Further complicating the situation in the districts of the state is the fact that school districts may not issue bonds for more than 10 per cent of the assessed valuation and these must have a two thirds' vote at a school meeting, together with the approval of the State Board of Regents. It is estimated that at least 166 districts of those listed with needs for immediate building construction cannot erect the necessary buildings without exceeding the 10 per cent bonded ratio.

New York City Needs

Of the building needs previous to September, 1950, New York City will require 205 new buildings or additions, to cost $331,832,787. These needs are exclusive of 127 projects now under way in the city, at a contract price of $76,622,962. For the period of 1950 to 1956, it is estimated that New York City will require the completion of 467 further projects, estimated to cost $316,595,843.

Dr. Essex' figures are truly alarming when the total cost of all buildings for the eight-year period, exclusive of projects under construction, is estimated to reach, $1,261,821,826.

Robertson County Schools Consolidate for Progress

*Gene H. Sloan**

When a veteran county superintendent is successful in launching a $2,000,000 building program, his school neighbors are likely to be envious.

When an experienced administrator provides a plan for lowering school taxes as much as 85 cents in some localities, all his neighbors, lay and professional, sit up and take notice.

If a curriculum expert of repute be able to replace much of the traditional academic subject matter of his schools with functional vocational courses, the educators recognize an effective worker.

Utilization of school facilities by the people of a community for recreational, civic, and community betterment is occasionally accomplished by the mature school leader.

Reconciliation of community rivalries and the abandonment of traditional school names and associations through co-operative consolidation is a challenge few administrators have been able to meet.

When all of these desirable educational changes occur in the space of two years, under the leadership of a novice administrator, those who have long been associated with schoolwork are prone to believe the age of miracles is still in existence.

Few people in Robertson County, Tenn., would have suggested when W. A. Shannon was elected county superintendent of education that there had occurred the elevation to public office of a man who would materialize dreams and realize visions. But he has done just that.

Robertson County, located in the middle area of Tennessee, 20 miles north of the capital at Nashville and adjacent to the Kentucky line, is fairly typical of the rural counties of Tennessee. With an area of 474 square miles and a population of approximately 30,000, its economy is based on agrarian interests in tobacco, wheat, cattle, grain, and hay, which, with their related industries, yield the major revenue.

In 1946 its system of school administration was also similar to others in rural Tennessee. A superintendent and a county board of education controlled the county system. The county seat (Springfield) and six other population centers had "special school" districts, each with a local board of from five to nine members. One 12-grade white school and one Negro school were operated jointly with neighboring Sumner County and a Negro high school was operated jointly by the county and the Springfield city boards. The eight high schools in the county ranged in enrollment from 50 to 250 and the 40 elementary schools had from 10 to 500 pupils in average daily attendance. The curriculum was strictly college preparatory, not even vocational agriculture or home economics were offered. Buildings were antiquated and dangerously overcrowded,

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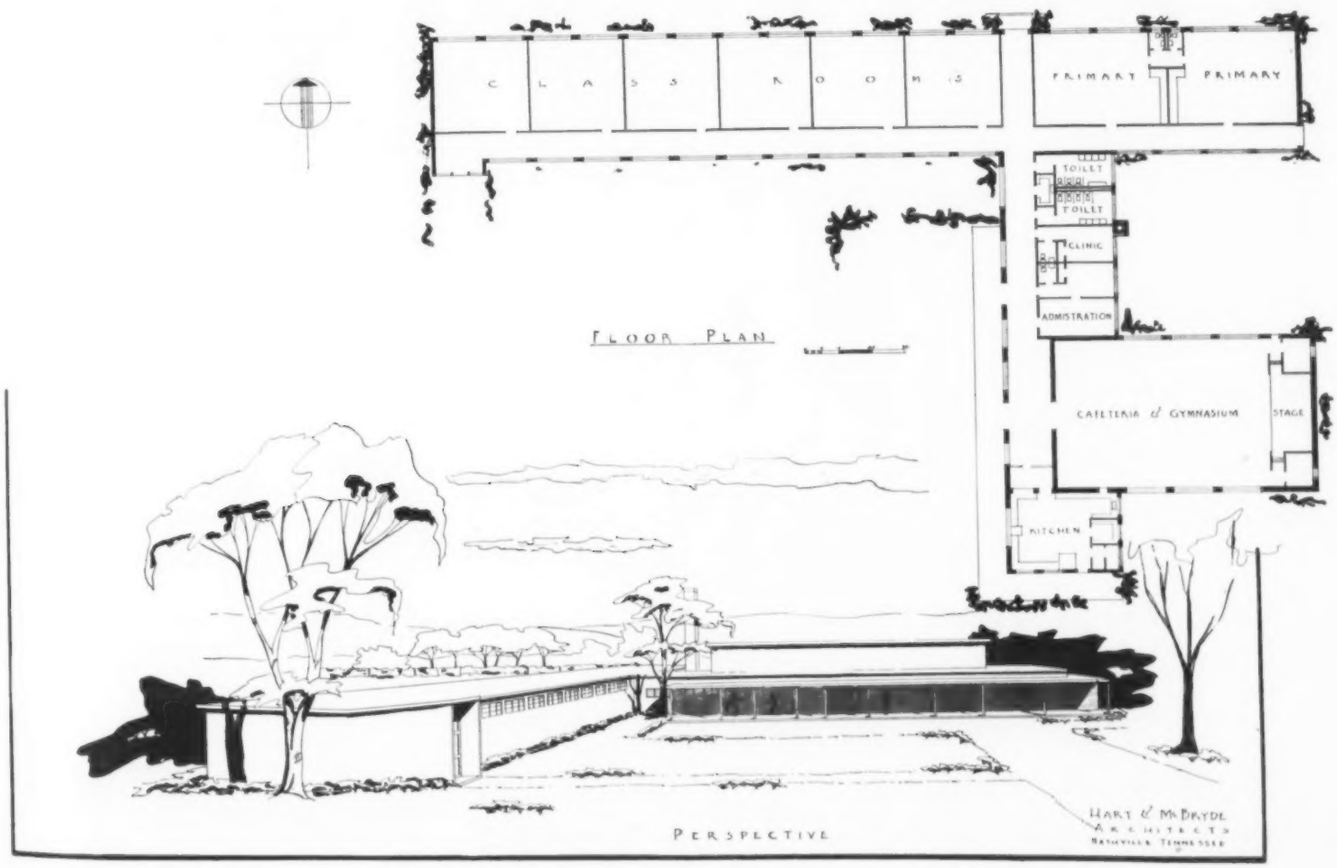
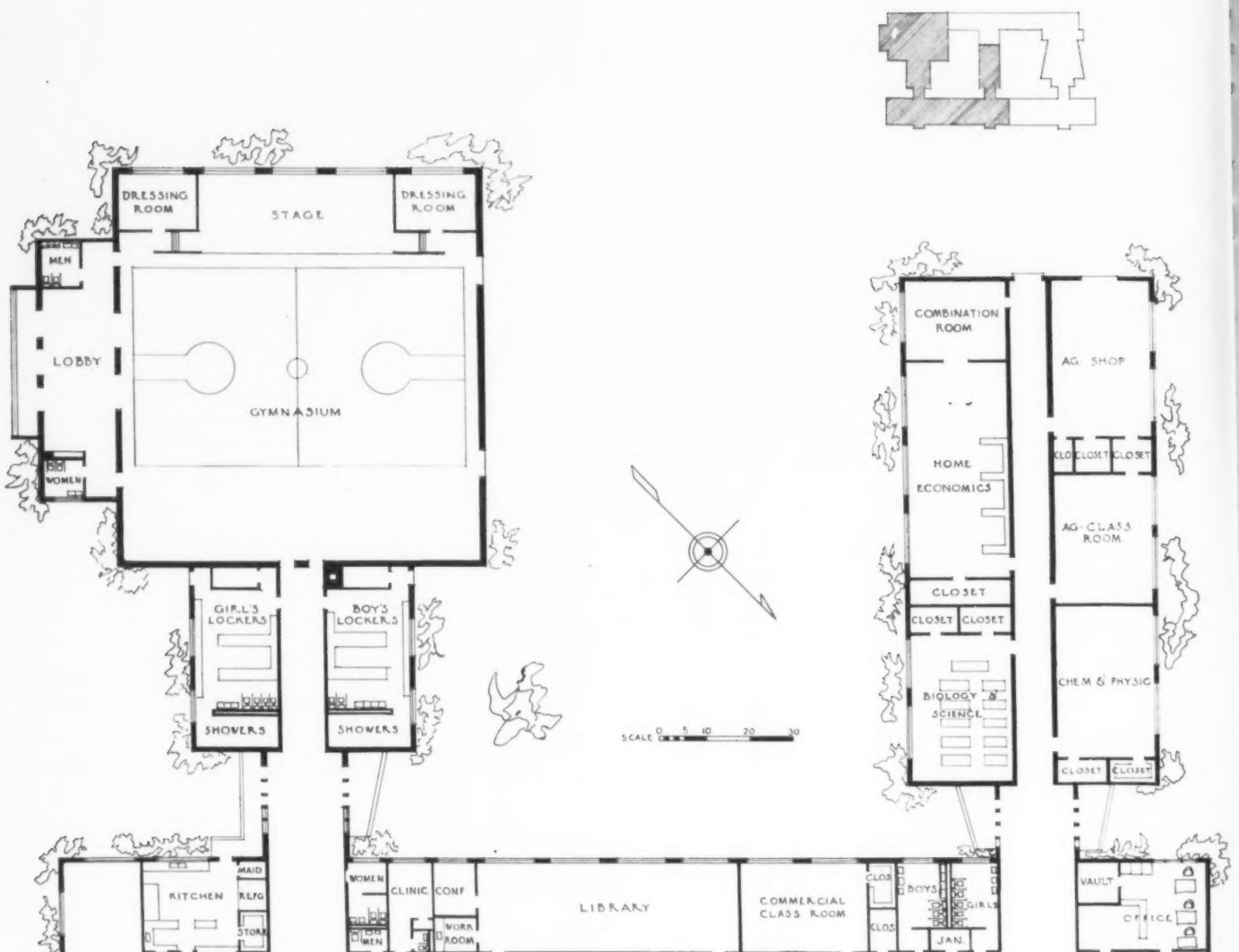


Midpoint Elementary School, Ridgetop, Tennessee. — Hart & McBryde, Architects, Nashville, Tennessee.



FLOOR PLAN

Greenbrier High School, Greenbrier, Tennessee. — Hart & McBryde, Architects, Nashville, Tennessee.

poorly equipped, and lacking in many modern facilities.

Of the 180 teachers in Robertson County there were 20 high school and 50 elementary teachers, working on emergency "permits," indicative of a lack of training and professional spirit.

An involved system of finance brought funds for school operation from the state, county, special school districts. All capital outlay required joint approval by county and local boards of education.

A Slogan for Progress

In March, 1946, youthful, energetic Wilburn A. Shannon took over the county superintendency and adopted as his slogan, "What do we want, how are we going to get it?" A graduate of Middle Tennessee State College, Shannon was no crusader for school reform, but a practical, intelligent school leader, well trained and bristling with enthusiasm.

Through mass meetings, workshops for teachers, school surveys, visitations with patrons, a constant round of talks before P.T.A. and civic groups, correlated with a carefully planned use of his local press and radio, Superintendent Shannon laid the groundwork for his program. In line with the policy of the State Department of Education in Tennessee he was preaching the doctrine that lasting improvement in the school system must originate with a desire on the part of the people themselves.

The county school board members, the county judge, the members of the County

The Robertson County Board of Education, Springfield, Tennessee. Left to right: W. A. Shannon, superintendent; John R. Long, Jr., mayor of Springfield and member of the board; H. D. Moore, Commissioner of Schools of Springfield and member of the board; J. M. Wilkinson; H. C. Woodard; R. J. McDaniel, chairman of the board; T. O. McMahan; Dr. R. H. Elder; J. S. Hollingsworth; L. E. Dorris.

Court, and lay leaders were brought together in conferences. A committee, consisting of three educational leaders, three County Court members, and three laymen was organized to survey the needs of the county and submit a systematic and feasible plan of school improvement to the people and to the Court. The leadership of the state department of education, which had undertaken to conduct a similar state-wide survey, and the Springfield Commissioner of Schools were invited to co-operate in the survey and to offer technical assistance.

This committee recommended a program based on the expressed desires of the people as revealed in a survey among the people. The recommendation called for a merger of the school systems of the county, the city of Springfield, and six special school districts into one system; educating all Robertson County pupils inside Robertson County, thus eliminating the two schools conducted jointly with a neighboring county; the consolidation of nine white high schools into four; the elimination of nine elementary schools through consolidation; the modernization of existing school buildings and the construction of the new ones demanded; and the improvement of facilities for the Negro schools. Since the county was an agriculture county the committee strongly recommended the introduction of vocational agriculture, vocational home economics, and business courses in the schools.

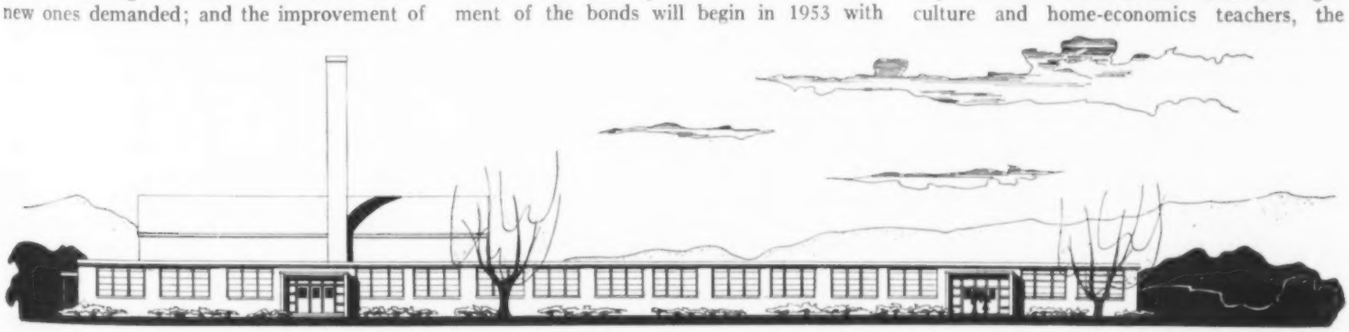
The Plan Is Effectuated

To remove the legal barriers that impeded the effectuation of the program, three private acts were passed by the Tennessee General Assembly in 1947. These acts permitted the merger of the school boards, added two members of the Springfield City Commission to the county board of education, and authorized the County Court to assume all school indebtedness in the county.

The Robertson County Board of Education then recommended to the County Court the merger plan, the assumption of the city and special school district indebtedness; the sale of $1,600,000 in school construction bonds and the purchase of 40 modern school buses. This was accomplished while at the same time the county school tax levy was reduced five cents on each $100 valuation and the special school district tax, which in Springfield was 80 cents was entirely eliminated. The retirement of the bonds will begin in 1953 with income accumulated from the county's share in the revenue from the Tennessee general sales tax until that date to be added to the original $1,600,000 in bonds making a building fund of approximately $2,000,000.

The buildings that are to be constructed embody the latest one story design of concrete block and brick veneer construction. Skylights and northern exposure promise the best natural light possible, while indirect artificial lighting is of the latest approved type. Covered, extended porches are provided to facilitate bus loading in inclement weather. Playrooms, cafeterias, and auditoriums occupy the wings of the buildings separate from classrooms and may be used as community centers while school is in progress without any interference with the school routine. These combination rooms are equipped with tables and benches that fold into the walls like an old-fashioned folding bed. Folding chairs provide seating arrangement for the auditorium or may be cleared away entirely during the play periods.

In the three new high schools, located by joint committees from the old school patrons, a year-round program for the whole community will be conducted. The vocational agriculture and home-economics teachers, the



Greenbrier High School, Greenbrier, Tennessee. — Hart & McBryde, Architects, Nashville, Tennessee.

principal, the coach and the building custodians are hired on a 12-month basis. The school grounds will be used during the summer as recreation and community centers. Community canneries, slaughter houses, and locker storage plants will be made a part of each school plant, and all community meetings and rallies will be scheduled for the school grounds or school auditoriums.

Adams and Cedar Hill High are no longer rival communities. Separated by four miles, they now find their school located at the midpoint between, bearing the name West High. Cross Plains and Orlinda have combined to form East High. Coopertown, Barren Plains, and Springfield will become Central High, while Greenbrier High will embrace the southern section of the county and serve a district that is rather industrial, with a program especially designed for the area which borders on the urban area of Nashville.

Secondary Advantages of Consolidation

In addition to the several apparent advantages of the consolidation in both the high school and elementary program there are numerous advantages that are more apparent to the educators of the county.

Previously the county had bookmobile service and the city of Springfield had none. The city of Springfield had a local library to which the county lacked access. Now the regional, school, and Springfield libraries will serve all the county.

Heretofore the city of Springfield did not have enough teachers to justify a supervisor. Now there are supervisors for all the schools, and, as a result of the merger, a supervisor of music, a supervisor of school lunches, and an instructor of driver training have been added.

Where two maintenance crews were employed formerly only one is now necessary. Schools that had few teachers could not qualify for janitorial service. Consolidation has provided this service, relieving teachers of duties usually performed by building custodians.

The materials centers located in the new buildings provide a wealth of library, audio-visual, and laboratory materials previously unavailable.

Built to allow for expansion as the community needs grow, the new buildings are complete with utilities and sanitary facilities that were previously unavailable in the small schools. Larger schools offer better trained and more efficient teachers. Community use insures community interest in the progress and development of the school.

The democratic processes have been followed in planning and locating these new, consolidated schools. Small committees were first organized in each community to survey the needs and possibilities. After the preliminary survey these committees brought the whole community together in a series of mass meetings. Experts from the state department of education and other sources were brought in to show the advantages of the changes contemplated. Finally a county-wide rally was held at the county seat with the Men's Club at Cedar Hill as hosts. There the leadership in the several communities, the County Court members, and others who had been co-operating in the program presented the advantages of the new program. Once empowered by legislation to act, these community committees co-operated in seeking the most accessible, the most beautiful, and the most advantageous sites for the new consolidated schools. The Robertson County schools are moving forward.

An Essential Step —

Publicity and School Building Programs

*Sidney M. Bliss**

It is a fundamental right of the people of a community to know what their schools are trying to accomplish; what they need, have, and do not have in order to carry on their work; and how well they are succeeding in their purposes. There is a corresponding duty on the part of public school officials to furnish the people with the information they need to form good judgments. From this it follows that a clear, interesting, well-balanced, truthful, and continuing program of public relations is an essential part of every good public school system.

Basic Criteria of School Publicity

1. *Truthfulness.* Under our form of government, all residual power for the control of education rests with the people of the state. They create constitutions and courts, statutes and legislatures, political units, commissions, councils, and boards; and they provide the personnel for the administration of these agencies. This is a fundamental principle which must be recognized by school administrators and boards of education. When this principle is recognized and subscribed to it results in a genuinely conscientious effort to furnish the people with *all of the truth about their schools.* It means that the administrator cannot give the people of his community only a part of the truth with the expectation that they will act upon it in a manner pleasing to him. Deceptive, misleading, incomplete information amounts to a denial of control of education by the people, and an affirmation in act of the doctrine that control of social institutions should be in the hands of the elite.

What, then, is the true role of the school administrator in relation to school publicity? The answer is simple. Tell the whole truth. Be the first to tell the whole truth, especially the adverse side (if there is an adverse side). Don't tip the scales with extraneous matter. Stand by the issues. But don't be cowardly. Be the man who knows more about the issues than any other person in the community. Learn effective methods of presenting the case. As a general rule, never ask the people for a decision on a new issue until you have analyzed the facts in great detail and have found the scales tipping your way. Be sensibly patient. If your community is satisfied with a fourth-grade level of education, don't try to give them a sixth-grade level by blindfolding them. Give them the best fourth-grade level you can, and then use every honorable method you have to convince them that they are not considering all the facts that should be taken into account. And don't be discouraged — if the history of education in the United States during the past century proves anything, it is that the people are willing to spend their money for schools.

Now when it comes to getting the money to build schoolhouses, the complete truth is not only the right policy but it is the most effective one. People want their children to go to school. They know that you must have good teachers. They know that teachers must have good instructional materials. They know that adequate housing facilities are essential. Hence the problem of school authorities is to explain the building needs in terms that can be understood by the man on the street.

Of course there must be a genuine *present* need, or a genuine *future* need that must be provided for at the present time. Otherwise, the building program is an outright falsification. If there is a present need it must be explained to the people in terms of the educational activities to be carried on, the number of children to be provided for *now,* and the building facilities *now* available for the work to be done. If the need is a future need, then the administrator has the duty to explain fully why the issue requires present considera-

*Los Angeles 7, 1948.

tion. Usually future building needs will result from (*a*) an increase in school population, or (*b*) changes in curriculum and administrative organization and practices, or (*c*) from old buildings wearing out. If future buildings will be needed because of calculated increase in school enrollments, then school authorities must explain to the people in simple terms the population studies that have been made. While no one would claim that population forecasts will materialize with certainty, the procedure is objective enough to appeal to the reason of ordinary people once they understand it.

Of course, increasing school population is not the only reason for present and future school building needs. The buildings on hand may be worn out or may have lost their functional utility. If so, tell the people about them. You may want to streamline the curriculum. If so, explain to the people that you do not have building facilities to carry out the program. You may want to reduce the size of classes (an urgent need in a great many schools, and especially in elementary grades). If so, tell the people that it will require more classrooms, more teachers, more supplies, more equipment — in fact, more everything that it takes to operate a good school.

It is worth repeating that the foundation of good public school publicity is the complete truth.

2. *Continuous Publicity.* A continuous publicity program is a fundamental in every good public relations program. It is fundamental (*a*) because it produces results and (*b*) because it is an essential ingredient of a thoroughly truthful policy. The people have a right to be suspicious when they are called upon to make far-reaching decisions involving many people, much money, and long periods of time without adequate time to consider the issues and facts. If the proposal for the expenditure of large sums of money is born overnight (so far as the public is concerned), the people have a right to use (and they should use) a good deal of salt in formulating their judgments of need. Fortunately school authorities are fast coming to see the importance of continuously bringing before the public the accomplishments of the schools, their limitations, their needs, and their aspirations. Schoolmen are coming to understand that while the old "campaign style" of publicity has a legitimate place, it should always be the culmination of a permanent, truthful publicity policy.

3. *Clear and Interesting Publicity.* Perhaps our greatest progress in school publicity has been made in the presentation of clear and interesting information. We still have a long way to go, but we are headed in the right direction. It is very interesting and encouraging to compare the various reports that are made to the public now with similar types of reports made a quarter century ago. The improvement is striking.

The best single criterion of interesting school information is that it deals intimately with the school children and what they do. A page of publicity portraying worth-while activities of school children is worth a volume of statistical compilations so far as the parents of Johnny are concerned — and particularly so, if the page gets Johnny in the picture. This is one good reason why those who manage school papers should see to it that the name of every child occurs in print as often as possible.

4. *Well-balanced Publicity Important.* One of the things to watch carefully in a program of school publicity is balance. Too frequently the information given to the public is lopsided, stressing one or two aspects of school activities to the exclusion of others which may be more important. In many schools, there is a strong tendency to stress extracurricular activities, especially athletics, although some studies indicate that these are not the things that interest parents most. A good publicity program will undertake to present all phases of schoolwork.

How to Win School Bond Elections

1. STEP ONE. *Ascertain present and future school building needs.* The over-ail rule for winning a school bond election is this: *Establish the need, publicize the need, hold the election, and count the ballots.* The first two are substance, the second two are form. While it is beyond the scope of this article to elaborate in great detail the methods and techniques employed in the determination of school building needs, it is in order to give some consideration to the matter.

a) Are additional buildings needed now? The first step to be taken in studying "the school building problem" in a community is to answer as authoritatively as possible this question, "Is there a present need?" To answer this question fully requires a consideration of (1) existing school buildings and facilities in the light of the educational program the community wants carried forward, and (2) a comprehensive study of the present school population to be provided for.

Information concerning the existing school buildings of a community should be constantly available in cumulative form in the office of the superintendent of schools. If such a procedure is followed over a period of years, it is a rather simple matter to measure the adequacy of the present plant at any desired time. The following is indicative of the data that should be maintained by the superintendent and his associates:

1. *Data relating to present buildings and sites*

a) Data about the entire school plant
- **1) A large map showing the boundaries of the district, the location of each school, and the location of all school sites, with distinctions between those that are developed and those that are not**
- **2) The total valuation of all school property, and the valuation of school property per ADA should be available**
- **3) Complete records of operation and maintenance costs should be kept**
- **4) Total pupil stations of all buildings should be known**
- **5) Per cent of pupil-station utilization of all buildings should be determined**
- **6) Comprehensive inventory of all equipment of the district should be maintained**

b) Data about each school building
- **1) Name and location**
- **2) Present use**
- **3) Original cost**
- **4) Present valuation allowing for normal depreciation according to accepted standards**
- **5) Valuation of building in terms of ADA**
- **6) Type of construction**
- **7) Insurance record**
- **8) Operation and maintenance records**
- **9) Type and condition of service systems**
- **10) Safety**
- **11) Expansibility**
- **12) Multiple use?**
- **13) Cost of modernization**
- **14) Suitable for community use**

2. Data relating to present school population

a) Enrollments by grades, subjects, and buildings should be maintained.

b) ADA by grades, subjects, and buildings should be kept.

c) The following maps should be prepared:
- **1) One map showing residential distribution of all pupils of the district**
- **2) One map showing residential distribution of grades K–6; one showing grades 7–9; one showing 10–12**
- **3) One map showing overlapping of attendance districts**

The foregoing data is in no sense exhaustive, but when it is available to school authorities they are in a position to tell the people the facts concerning the adequacy of the existing school plant.

b) If additional buildings are not needed at present, when and how many will be needed in the future? As indicated in the foregoing discussion, measuring the adequacy of the present school plant in terms of the present school population is not particularly hard to do, and it can be done with a high degree of accuracy. But the determination of future building needs is not so simple. It involves reading the future — and no one can do that with the certainty that his forecast is completely accurate. We can obtain rather detailed data of what is now true and what has been true of such factors as birth rates, building permits, residential development, changes in the character of the population, vocational changes, broadening educational concepts, and many others, but we cannot foretell when these may be altered. Notwithstanding, we have had enough experience to know that predictions can be made with some degree of accuracy (sometimes a high degree) with the techniques that have been developed. While not exhaustive, the following data will be helpful in predicting future school building needs:

1. *Maps*
- **a) One map showing residential, business, and industrial areas of the district**
- **b) One map showing the exact location and type of each dwelling in the district, and the undeveloped lots**
- **c) A map showing residential distribution of children under school age**
- **d) Maps showing residential distribution**

by grades, developed in connection with adequacy of present buildings, can be used to advantage

2. *Charts*
   - *a*) **A chart showing score of each building at the present time**
   - *b*) **A chart showing score of buildings on certain major items such as gross structure, corridors, stairways, lighting, classrooms, toilet systems, and fireproofness**
   - *c*) **A chart showing playground space per pupil at each building in relation to acceptable standards**
   - *d*) **A chart showing growth in population by decades**

3. *Tables*
   - *a*) **A table showing composition of population**
   - *b*) **A table showing distribution of population by occupation**
   - *c*) **A table showing relation between total population and age groups**
   - *d*) **Per cent each grade enrollment is of total enrollment**

So if school authorities want to win school bond elections, the first thing they must do is to establish a need in terms of the most complete and reliable information that can be obtained. If there is a genuine need and if this need is well established by objective data, there is little to fear from anyone who may be opposed to bonding the district.

Four Elements of Good Public Relations

2. STEP TWO. *Publicize the need.* Here we are to consider not those fundamentals of truthfulness, continuity, clarity and interest and balance which are so essential to good publicity, but rather some of the media and methods by which the need for school buildings is brought to the attention of the people. The media for school publicity are limited only by the constructive imagination of school authorities. Only a few of them can be considered in this article.

a) *How to deal with opposition elements.* When you have decided that a school bond election is justified, get ready to meet opposition. It is certain to come. All communities are alike in this respect — they differ only in the extent of opposition, in its manner of manifesting itself, and in its effectiveness. The opposition may be organized, or unorganized, or both. Unorganized opposition is generally found among people who do not possess all of the facts with respect to the issue. They are influenced by someone who is influenced by someone who is influenced by someone — and none of them knows the complete truth. On the other hand the opposition may be very effectively organized. Leaders of organized opposition often can put up a convincing case when they are dealing with people who have not been given the facts concerning building needs. With organized opposition we are dealing with selfishness supported by intelligence; with unorganized opposition we are dealing with ignorance supported by selfishness — and of course intelligent action is always more effective. But whether the opposition is organized or unorganized, the answer to it is invariably the same: Base your case on need, and support your case by the most complete and objective evidence that can be obtained.

In a general way, school authorities have a fairly good idea of the organized opposition likely to be encountered. But before public announcement of a proposed election is made, a lot of spadework needs to be done. One way to proceed is to make a tentative classification of all organizations and agencies in the community, listing them as "for," "against," or "neutral." Having decided that Organization A is likely to oppose the bond issue, a genuine effort should be made to "win over" the organization over before its leaders have committed themselves by a public announcement. It is highly desirable to invite opposition leaders to meet with the school authorities at which time a comprehensive analysis of the building need is presented. At this meeting school authorities should make it crystal clear that they are not keeping any "cards up their sleeves." The opposition leaders should be given full opportunity to present all of the arguments they can muster against the proposed bond issue. No information should be withheld from them. Such a practice is desirable for two reasons. In the first place, it may result in receiving the support of the organization rather than its opposition. In the second place, if it does not win the organization's support, it will have weakened arguments that otherwise could have been employed with great effectiveness. Men are less likely to oppose a proposition when they have had an opportunity to discuss it in the early stages of its development.

On the positive side, there are a great many organizations and leading citizens who can be depended upon to "go to bat" for the bond issue. The problem here is to *plan their activities* so that the most effective results may be obtained. It is a thing to be done rather than to be written about.

b) *How to canvass the voters.* As previously stated, the media and methods of promoting a bond issue are many. One of these methods (and the most effective of all in the opinion of the writer) is person-to-person interviews. But great care is required in using this method. Not all people who are for the issue are good interviewers. To do the job well requires complete information concerning the need, coupled with patience and tact.

In connection with canvassing, some school authorities think that it is not advisable to canvass persons who are believed to be opposed to the issue. The writer does not concur in this view for a number of reasons. *First,* to some extent it is a confession that we believe that decisions should be made by *some* of the people and not all of them (the "some" being our "some"). *Second,* it furnishes the opposition with ammunition to use. *Third,* it contains much error because of the difficulty of knowing who is "for," "against," or "neutral" in so far as individuals are concerned. *Fourth,* it prevents the winning of converts. School bond elections are lost through the failure to get action on the part of all qualified voters. When the total vote is large, the probabilities of winning are high.

c) *How to deal with the newspapers.* The newspaper is one of the most important avenues of school publicity. This is true not because the owner or editor is a highly informed and respected citizen of the community whose judgments should be followed, but simply by virtue of the wide circulation of the paper. Because of its great influence, school officials should seek to enlist the support of the local press.

Developing good relations with the press is a two-way affair, but much depends on the attitude of school people. One fine test of a school administrator is his capacity to "win reporters and influence editors," and the only way to do this is to deal with them directly, honestly, impartially, in a spirit of genuine cooperation. Of course there are exceptions, but as a rule newspapermen can be trusted. Moreover, they believe in education and recognize the importance of good schools. Unless antagonisms have arisen, they are anxious to allot a maximum of space to educational news. Naturally they want good news, and it is the responsibiilty of the schools to furnish this kind. And in this connection we need to realize that we have hardly scratched the surface of a great reservoir. Schools are full of human interest. In the hands of a good reporter these human interest incidents can be made "news," and to the extent that they are, to that extent the cause of education is helped along.

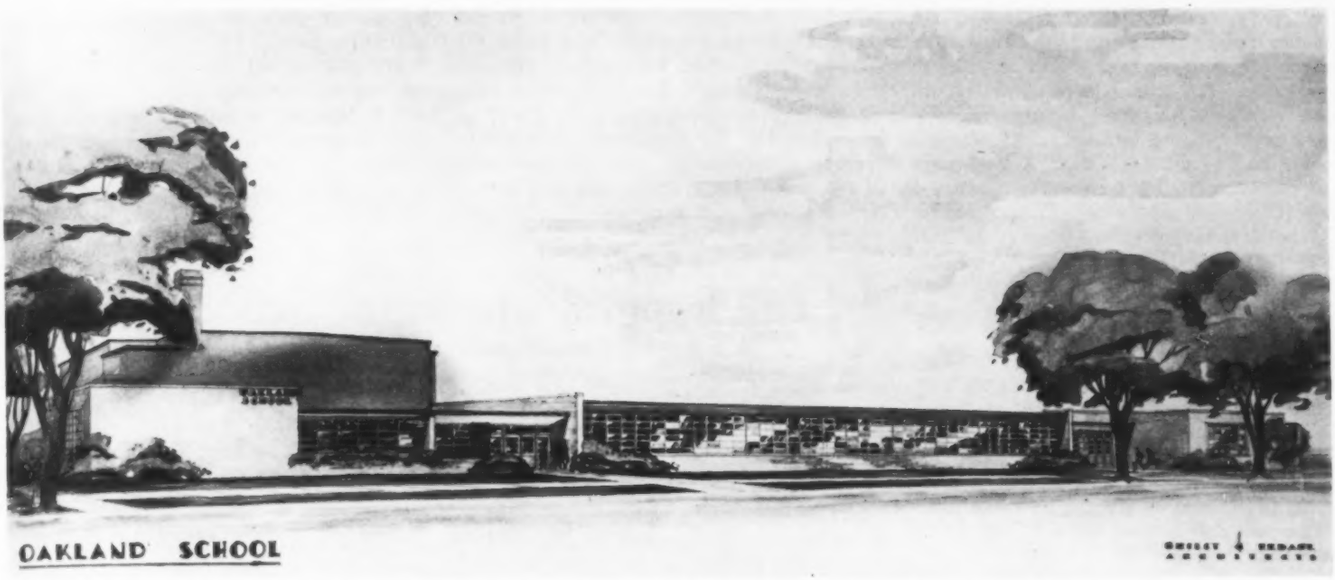
d) *What the school children say counts.* What the children think about their school has more to do with what the parents think about the school than any other single thing. Someone has said that the children "see all, hear all, and are not hesitant to tell all" — and that is close to the literal truth. Almost every day in every home of every school child, remarks are made by the child which make a deep impression on his parents. A little genuine consideration for Johnny's welfare in school by someone around the school is almost certain to put his Dad's vote in the right column on election day. Kindness pays big dividends, and this is especially true when the kindness is shown to the other fellow's children.

DENVER VOTERS APPROVE 21-MILLION-DOLLAR SCHOOL-BOND ISSUE

By a vote of seven to one, the voters of Denver, Colo., approved a school-bond issue of $21,000,000 for the financing of an extensive school-building program. A total of 32,688 votes were cast for the bond issue. The net interest rates for the bonds is 2.045.

The election followed a six months' period of local publicity with regard to the needs for new school buildings. The three points stressed in the campaign were: (1) the increased birth rate and its effect on the schools; (2) development of new residence areas in which no schools are provided; (3) obsolete schools no longer fit for school purposes.

Dr. Kenneth E. Oberholtzer, superintendent of the Denver schools, declared that the huge bond issue will be spent over a five-year period.



The Oakland School, Topeka, Kansas, derives its beauty from the low horizontal lines and the interesting color treatment of the blank wall areas. — Griest and Ekdahl, Architects, Topeka, Kansas.

The Oakland Grade School, Topeka, Kansas

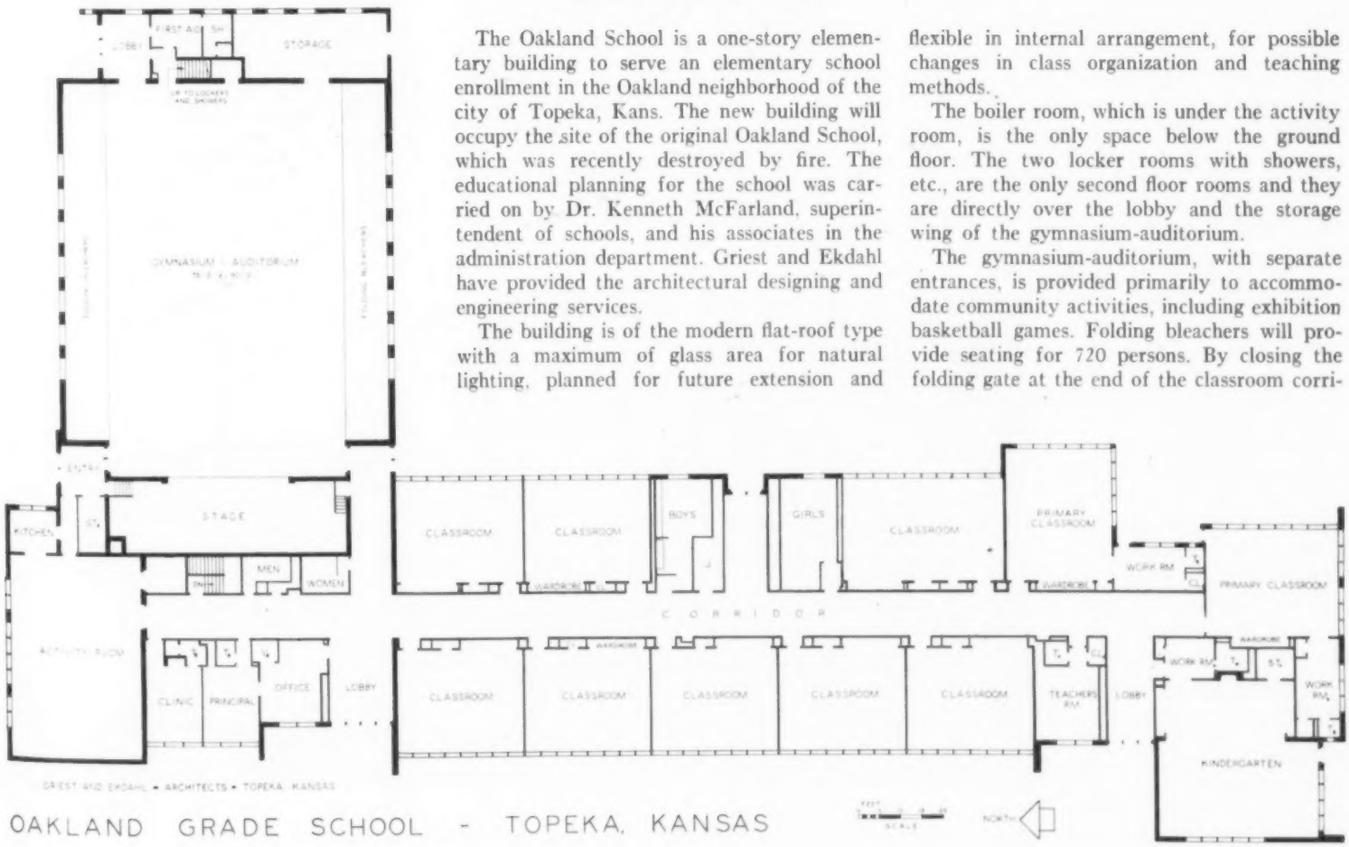
Designed by Griest & Ekdahl, Architects, Topeka, Kansas

The Oakland School is a one-story elementary building to serve an elementary school enrollment in the Oakland neighborhood of the city of Topeka, Kans. The new building will occupy the site of the original Oakland School, which was recently destroyed by fire. The educational planning for the school was carried on by Dr. Kenneth McFarland, superintendent of schools, and his associates in the administration department. Griest and Ekdahl have provided the architectural designing and engineering services.

The building is of the modern flat-roof type with a maximum of glass area for natural lighting, planned for future extension and flexible in internal arrangement, for possible changes in class organization and teaching methods.

The boiler room, which is under the activity room, is the only space below the ground floor. The two locker rooms with showers, etc., are the only second floor rooms and they are directly over the lobby and the storage wing of the gymnasium-auditorium.

The gymnasium-auditorium, with separate entrances, is provided primarily to accommodate community activities, including exhibition basketball games. Folding bleachers will provide seating for 720 persons. By closing the folding gate at the end of the classroom corri-



OAKLAND GRADE SCHOOL - TOPEKA, KANSAS

dor, the gymnasium-auditorium end of the building can be opened for evening activities without exposing the rest of the building to the public. The gymnasium-auditorium will have glazed-tile wainscots, exposed masonry block walls painted, prefinished acoustic-tile ceiling, and a hard maple floor. A large stage will provide adequate facilities for theatrical presentations and other types of entertainment. A room is arranged on the gymnasium floor level for storage of gymnasium equipment. This room is also accessible from the playground for storage of movable playground equipment.

The activity room, with facilities for food service, will accommodate smaller meetings, and its location will permit meetings during the day without interference with classroom activities. This room will permit supervised play when inclement weather prevents the use of the playground by the children. The gymnasium will also be used for play purposes in inclement weather.

There are ten classrooms and one kindergarten room. One of the classrooms is longer than the others and will be equipped with lightproof shades for audio-visual education. Each classroom will have a recessed wardrobe, a combination teacher and storage closet. Continuous shelf and cabinet units of steel will occupy the space below the windows and match the convector radiator and unit ventilator in material and design. All classrooms will have asphalt-tile floors and base, glazed-tile wainscots, plaster walls painted, and prefinished acoustic-tile ceilings. Oak trim throughout will be finished light and the furniture will be in light wood. All chalkboards will be green, placed on the front and rear walls, and on the wardrobe doors. Fluorescent lighting will be used in all classrooms.

The two primary classrooms and the kindergarten room will be finished similar to the other classrooms, but will have game designs in the floors, and windows arranged for bilateral lighting. Each of these rooms will have a separate access to a somewhat secluded playground, and each will have a toilet and workroom. The workroom will have a sink, storage space, and a case approximately 26 inches high with a wood countertop and doors and lockers.

The corridors throughout the building will have glazed-tile wainscots 6 ft. 9 in. high, and plaster walls above painted. The ceilings will be prefinished acoustic tile. Floors and base will be of terrazzo.

All toilets will have glazed-tile walls to the ceiling, plaster ceilings painted, and floors of terrazzo.

The construction of the building will be relatively light inasmuch as the roof loads are the only loads to be supported above the ground floor. Structural steel will be used for beams and columns, with open web type steel joists and steel roof deck which will overhang the windows about 4 inches. The roof will be fully insulated. The windows throughout will be of steel and in the classroom section will be continuous between the front and rear walls of the rooms. The concrete floor will be laid on the ground, and accessible service tunnels will provide means for supplying steam to the heating elements.

The building will cost approximately $340,000, and it is estimated that $36,000 additional will be needed for furniture and equipment. The architects declare that the cost of construction will be approximately 64½ cents, or with equipment 71½ cents. At a rated capacity of 400, the cost will be $940 per pupil.

The High School, Ionia, Michigan. The section at the right of the main entrance has just been completed and is architecturally in harmony with the remaining older units.

Long-Range Planning of School Plants

Arthur A. Rather [1]

With the opening of the 1948–49 school term, most school districts of the nation were faced with the most acute problem of housing school children which had been presented in many decades. Many reasons for the situation existed, among them, (1) the marked increase in the birth rate, (2) the reorganization of school districts resulting in the abandonment of obsolete buildings, (3) the increase in the compulsory attendance age of school children, (4) the change in public opinion on the extension of the benefits of public education, and (5) the failure for more than a decade to build school buildings.

The methods of planning, constructing, and financing school buildings which prevailed in the past just will not work in the present. In meeting the present crisis we must think for the future as well as plan for it. The experience of the recent past compels us to think of a future that is steadily changing. To meet the new conditions of society and the growing concepts of education, we must apply an attitude of open-mindedness to all planning for education and the educational plant.

Fortunately, we have already been developing certain planning principles which will help us if we only put them to work. We have found that there is especial value (1) in the open type of plan which allows for the ready enlargement of school buildings; (2) in types of plan and methods of construction which result in flexibility to meet changes in the use of existing teaching areas and rooms; (3) in planning the size and arrangement of rooms for multiple use, especially in small schools; (4) in constant revision of construction methods to utilize new materials and changes in old; and (5) in careful study of current financing to benefit from low interest rates or community tax ability. Even though all these principles and others have been found successful generally, they must be applied in the local situation so that the long-range planning program may culminate in school buildings which effectively house children for instruction.

Long-range planning involves preliminary surveys which are continuous in nature. The ultimate needs must be projected from year to year and the most immediately important ones must be met by constructing the units in the sequence of the greatest need.

Typical examples of the shortsighted results of a short drive in planning, which overlooks the long-range considerations, are to be found in the red brick high schools built in the nineties to which a cement-block gymnasium, erected by WPA labor, was added in the thirties. Invariably, the effect is ugly on the outside and instructionally ineffective inside. A worse situation is created in some communities where an ornate high school of the twenties was replaced by a new building and then remodeled for use as an elementary school.

Long-range planning should include provision for sufficiently large sites upon which to erect buildings and leave adequate space for play-

(Concluded on page 84)

[1]Superintendent of Schools, Ionia, Mich.

A New Concept —

Cold Cathode Fluorescent Lighting

*John W. Lewis**

School administrators are still groping in the dark for a satisfactory solution to the problem of providing proper lighting for classrooms. In addition to the problem of the maximum use of daylight there is the problem of proper artificial illumination. Shall we use incandescent lighting or fluorescent lighting? If we use fluorescent lighting should we use hot cathode fluorescent lamps, which are the commonly used type of fluorescent lighting, or should we consider cold cathode fluorescent lamps instead? School administrators who have installed hot cathode fluorescent lamps in a large number of buildings, have found themselves confronted with a maintenance and operation problem far greater than they had anticipated. As a means of reducing this maintenance problem involved in hot cathode fluorescent lamps, especially as cold cathode fluorescent lamps are promoted more vigorously on the market, the school administrator will need some basic information to assist in the selection of the type of lighting to be installed.

The purpose of this discussion is not to urge the adoption of any particular type of artificial illumination, but to present in convenient form some basic data which will clarify the issues involved. As these issues are clarified, the decision in each case can be made more objectively.

The Newer Concept of Lighting

Before proceeding to discuss the differences between hot cathode fluorescent and cold cathode fluorescent lighting, it is important to review the recent changes in thinking, relative to what constitutes good artificial lighting. For many years the emphasis was placed almost entirely on providing the proper intensity of lighting, measured in terms of foot-candles. Progressively the Illuminating Engineering Society has recommended increasing intensities. The latest (1948) "American Standard Practice for School Lighting" carries a recommendation of 30 foot-candles for classrooms. What has not been made clear to many school administrators in all the discussion of intensities is that intensities must be increased in almost a geometric ratio to get an arithmetical progression in benefits in terms of increased visual efficiency. As intensities increase beyond 20 foot-candles rather large increases in intensities are required to provide small differences in visual efficiency. The National Council on Schoolhouse Construction, as well as others, has taken the position that a final decision on practical and desirable intensities must be made by a widely representative group which will include ophthalmologists, psychologists, and educators as well as illuminating engineers. School administrators are particularly reluctant to accept uncritically any recommendations in excess of 25 or 30 foot-candles for classrooms because this would, in practically every case, rule out incandescent installations because of the heat given off.

Emphasis is being shifted from lighting intensities to quality and to proper standards of brightness contrast. The National Council on Schoolhouse Construction has recommended as an acceptable contrast brightness ratio, that no object within a 60° cone of vision (30° around the line of sight) should have a brightness higher than ten times that of the task, and no object should have a brightness less than one fifth that of the task. Brightness is measured in terms of foot-lamberts. Assuming that the paper on which a pupil is writing reflects 70 per cent of the light falling on it (reflectance factor of 70) it would have a brightness of 21 foot-lamberts under a lighting intensity of 30 foot-candles (30 x .70). Under the Council recommendation, for example, when the brightness of the task is 21 foot-lamberts, no object in the surrounding field (60°) should have a brightness in excess of 210 foot-lamberts (21 x 10). This standard is difficult to achieve except where lighting is almost totally indirect or where intensities are considerably in excess of 50 foot-candles. In changing to indirect lighting, it is important to bear in mind that this will require keeping the interior of buildings painted frequently enough to make indirect lighting effective. It is important to have a background of these newer concepts of lighting as a basis of considering data regarding hot cathode and cold cathode fluorescent lighting.

Fluorescent Lighting

Fluorescent lamps are tubes coated on the inside with various phosphor powders which glow and give off light when electrically activated. Cold cathode lighting is similar to hot cathode fluorescent lighting in basic principle but differs in the type of electrode it uses. There are also differences in the type of equipment used to regulate lamp voltage and current, in standards of size, and in some technical characteristics. The effects of these differences on school lighting installations will be discussed below.

Lamp Life

One of the significant differences is that of lamp life. Cold cathode lamps are not affected by the number of times the lamp is turned on and off, while the life of a hot cathode lamp is affected by the number of starts. The rating of 2500 hours for the average life of hot cathode fluorescent lamps is based on an average burning period of three hours per start. Lamp failures may be expected after 1000 starts even if the number of hours the lamp has burned is much less than 2500. Cold cathode lamps, on the other hand, have an effective life of more than 10,000 hours, which for the average school would represent a life of more than ten years. Such long lamp life is particularly important in those cases where fixtures are relatively difficult to reach for lamp replacement. This long lamp life also permits replacements to be made at one time instead of "piecemeal" as in the case of hot cathode lamps, when to replace 50 lamps will mean getting the step ladder 50 times.

Cold Cathode Lamps in Series

Cold cathode lamps may be operated in series from transformers or may be operated in multiple by the use of ballasts. Where they are operated in series it is important to compute the number of lamps in the load of the transformer as close as possible to the peak of its wattage if maximum lumens per watt are to be secured. This loading should not be computed from tables used for sign lighting, but from tables developed for illumination. The carrier gas pressure of cold cathode tubes used for signs is usually 6 millimeters of mercury while that of tubes used for lighting is usually lower (4 to 4½ mm.). This difference will affect engineering calculations.

All a.c. fluorescent lamp ballasts have some hum. Where cold cathode lamps are operated in series it is frequently possible to locate the transformers outside the classrooms, eliminating all hum in the classroom. Where located in the classroom transformers may be rubber mounted, greatly reducing the amount of hum.

Cold cathode lamps in series circuits may be dimmed with usual dimming devices from full brightness to just a glow, but hot cathode lamps will not operate if the voltage is cut below the critical operating voltage of the lamp.

Instantaneous Starting

Cold cathode lamps have instantaneous starting while the usual hot cathode lamps do not. Instantaneous start operation for hot cathode lamps is available but at considerable increase in cost of lamps and auxiliaries. Cold cathode lamps do not require starters, and thus eliminate starter

*Assistant Superintendent, Baltimore, Md.

maintenance which is frequently troublesome in the case of hot cathode lamps. Instantaneous starting has some favorable psychological effects and causes less distraction of attention.

Low Brightness Cold Cathode Lighting

Cold cathode lamps may be operated on transformers with various short-circuit ratings: 60 milliamperes, 120 milliamperes, etc., providing actual lamp current about 20 per cent below these figures. A lamp operated at 60 milliamperes has a lumen output and brightness approximately one half that of the same lamp operated at 120 milliamperes. It requires, therefore, double the number of lamps operating at 60 milliamperes to get the same lumen output as compared with operating at 120 milliamperes, since the brightness of the lamp and lumen output are cut in half.

Installations of unshielded cold cathode lamps with a diameter of one inch, operated on 60 milliampere transformers have been tried in schoolrooms. The surface brightness of such lamps is approximately 500 to 550 foot-lamberts[1] (approximately 1.2 foot-candles per square inch). This brightness is somewhat above the recommended brightness ratio suggested by the National Council on Schoolhouse Construction,[2] which, as indicated above, recommends no object within a 60-degree cone of vision be more than 10 times as bright as the visual task. It is not, however, much brighter than the louvers of shielded fluorescent fixtures, which frequently have a brightness of 450 foot-lamberts, and is about half the bare lamp brightness of hot cathode lamps which are visible if a student looks up. It is much lower than the brightness of diffusing spheres commonly used with incandescent lighting; e.g., a 16-inch diffusing sphere enclosing a 300-watt bulb has a rated brightness of 955 foot-lamberts, and an 18-inch diffusing sphere enclosing a 500-watt globe has a rated brightness of 1280 foot-lamberts.

Where unshielded low-brightness, cold cathode lamps are used, the brightness contrast between various parts of the ceiling is affected by the distance the lamps are dropped below the ceiling. If mounted, for example, only six or eight inches below the ceiling the contrast between the ceiling immediately over the lamp and the ceiling midway between the rows will be greater than if the lamps are mounted slightly lower.

Lumens per Watt

The lumen output per watt of cold cathode lamps is approximately 10 to 15 per cent lower than that of hot cathode lamps, but is still approximately double the lumen per watt output of incandescent lamps. This difference in efficiency between hot cathode and cold cathode lamps is largely offset in unshielded low-brightness, cold cathode installations by reason of the fact that lumen loss within the shielded fixture is practically eliminated.

Comparative Costs

The cost of unshielded, low-brightness, cold cathode installations is approximately the same as an installation of two-lamp, shielded, hot cathode fixtures. The extra cost involved in using double the number of lamps in the low-brightness cold cathode installation is offset by savings in fixture costs. In new buildings cold cathode series installation make possible some savings in wiring costs. The savings are increased if a low voltage remote control wiring system is used. Cold cathode, shielded installations are higher in cost than shielded installations of the 40-watt hot cathode lamps.

Shielded Cold Cathode Lighting

When cold cathode lamps are shielded they are operated at higher amperage (120 or 180 milliamperes), in order to get higher lumen output per foot of tube. The extra cost of cold cathode as compared with hot cathode installations, together with the slightly higher current cost of cold cathode lamps, may be justified if the extra maintenance involved in hot cathode installations is an important factor. In a school where electrical maintenance service is costly or hard to procure, the higher installation and current costs involved in a shielded cold cathode installation might be justified on the basis of eliminating the costs and trouble involved in hot cathode maintenance and relamping.

Shop Lighting

In shops where an industrial, unshielded type of fixture is to be used, the low brightness of cold cathode lamps operated at 60 milliamperes will provide a more comfortable installation than would hot cathode lamps having a higher brightness. Even at 120 milliampere operation the surface brightness of cold cathode lamps is somewhat lower than the brightness of hot cathode lamps.

It must be pointed out, however, that most fluorescent lamps have some stroboscopic effect which makes their use questionable in some cases where moving machinery is operated. The stroboscopic effect of cold cathode lamps in series is greatly reduced by connecting the various transformers on different phases of the current.

Conclusion

In the light of the foregoing discussion, it may be stated that 60 milliampere, unshielded, cold cathode installations, with a one-inch diameter tube, have not been used widely enough in classrooms to get a final judgment on their acceptability in respect to quality, although the lamp brightness is in excess of the Council's recommended brightness ratios. However, it may be said that they are much better in this respect than diffusing globes. It may also be pointed out that most installations of louvred fluorescent fixtures do not entirely conform to these standards. Hot cathode fluorescent installations have troublesome and costly maintenance problems in lamp replacement and repairs to starters and auxiliary equipment. Cold cathode installations, which have a lamp life of 10,000 hours, and which have no starters to give trouble, largely eliminate the maintenance problem. Low-brightness, unshielded, cold cathode installations also reduce cleaning costs, since only the lamps and not the whole fixtures need to be cleaned. Where maintenance is a troublesome problem the somewhat higher initial cost of shielded cold cathode installations may be justified as compared with hot cathode installations.

Where current costs are low and, where lamps are not burned many hours per day, in the interest of economy and ease of maintenance, many administrators will continue to select incandescent lighting with fixtures which will meet modern standards of brightness contrast. Some form of fluorescent lighting will probably be used where any of these conditions prevail:

1. Where current costs are high and hours of burning are long
2. Where satisfactory intensities can be secured in a modernization of existing lighting by the installation of fluorescent fixtures without rewiring the building
3. Where intensities in excess of 30 foot-candles are desired

In the selection of the type of fluorescent lighting, it will be necessary to weigh all factors relative to quality, cost, and maintenance difficulties. As these factors may change in the future either by technical improvements or by changes in relative costs, decisions must be changed accordingly.

[1]The foot-lambert is the unit of brightness equal to the average brightness of any surface emitting or reflecting one lumen per square foot.

[2]The National Council on Schoolhouse Construction — Proceedings of 23rd Annual Meeting, October, 1946, W. D. McClurkin, George Peabody College, Nashville, Tenn.

SCHOOL BUILDING CONSTRUCTION

During the month of November, 1948, contracts were let for the construction of 281 school buildings in 37 states east of the Rocky Mountains. Dodge reports that the valuation of these contracts was $47,021,000.

During the month of November, 1948, contracts were let for 28 school buildings in Pacific Coast States, at a cost of $8,192,805. During the same period, 31 buildings were reported in preliminary stages, at an estimated cost of $4,103,630.

SCHOOL BOND SALES

During the month of October, 1948, permanent bonds for school building construction, in the amount of $49,732,750, were sold. The largest issues were in Colorado, $21,000,000; in New York, $4,717,700; in Oregon, $2,736,000; in Virginia, $2,475,000. The average bond yield for large city issues as of November 1, was 2.39 per cent.

SCHOOL FIRES

The National Fire Protection Association reports that during 1947, a total of 341 school fires were recorded in 14 states, with a combined loss of $1,443,961. It is estimated, on the basis of these records, that the total number of school fires in the United States was 2400 and the loss $8,100,000.

The Planning and Construction of School Buildings for Economical Maintenance

*E. B. Holden**

The term maintenance as applied to school buildings has usually been an inclusive term taking in both the major items of repair and ease of daily physical operation. In the accompanying cuts the term has been broken down into these two categories though the distinction has not been strictly adhered to because some items of each appear in each of the sketches.

To avoid bringing up examples more than once and to avoid having to draw the fine line of distinction which would be necessary in some cases, both points will be discussed together.

Wainscots

What schoolman of experience has not cursed plastered corridor wainscots that continually need patching and repainting. If they were painted a highly reflective color to save what little light these corridors usually had, or structural tile is used, these problems are all but eliminated. Linoleum wainscots under blackboards in the classroom are easily wiped off and do not take the shoe marks so obvious in plastered rooms.

Elimination of Exposed Piping and Radiation

It is perfectly possible and feasible, as illustrated in Figure 2, to concentrate the heating and ventilating system in the corridor wall thus eliminating any necessity for any exposed piping and radiation. Not only does this remove one of the most troublesome of housekeeping problems, but it reduces by some 75 per cent the amount of steam and return piping commonly used. This also eliminates the "burying" of any pipes in floors, end walls, or ceilings and the attendant major operations when piping eventually begins to deteriorate.

With the ventilating system removed from the outer walls the chance of the freezing of heating pipes in extreme weather is avoided.

Because of the concentration of all heating and ventilating in the corridor walls, all vertical piping may be run in chases in the columns. As indicated, these chases are covered with bulletin boards which are easily removable to make all vertical piping available for inspection or repair. Also these chases are part of the ventilating system which permits pipes to be dry always and reduces deterioration from rust.

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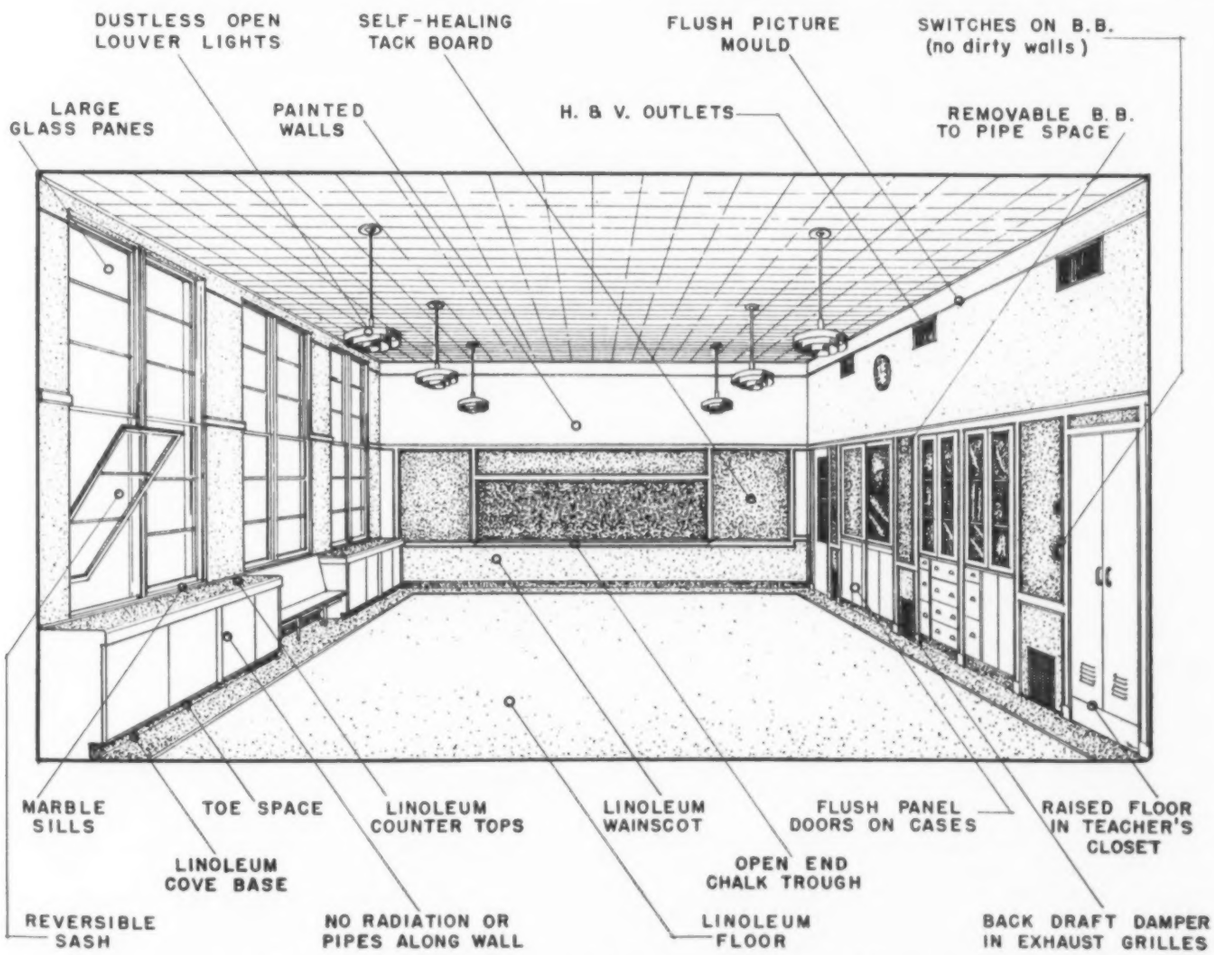
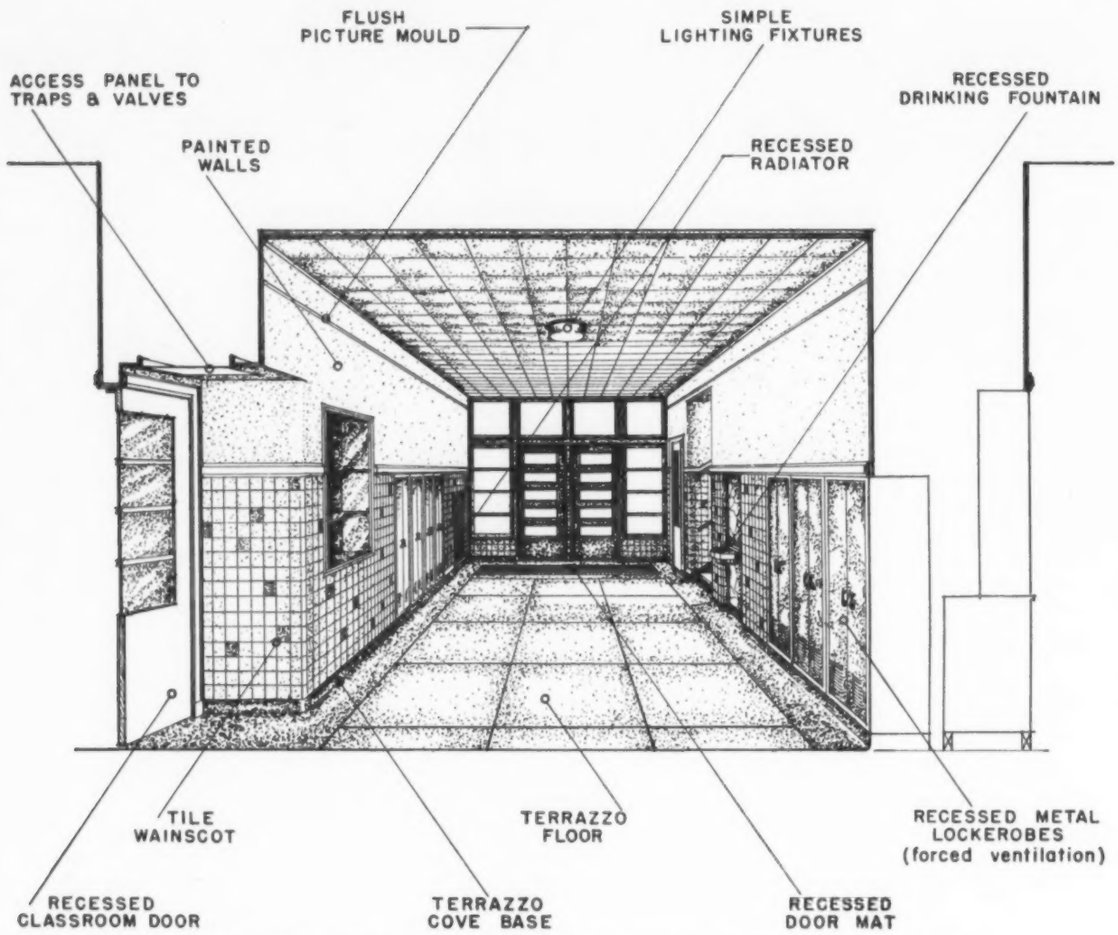


A classroom interior designed and constructed for easy housekeeping and minimum maintenance costs. — Warren S. Holmes Company, Architects, Lansing, Michigan.



A school corridor planned and constructed for low maintenance cost. — Warren S. Holmes Company, Architects, Lansing, Michigan.

Built-in Storage Cabinets

There is nothing that makes good housekeeping more difficult than a host of miscellaneous bookcase and storage cabinets stuck in various parts of a schoolroom. With good planning all of these facilities can be built into the corridor wall of the classroom or where additional facilities are needed as compartment cases under the windows on the outside wall. Not only do these facilities inspire and make possible good housekeeping but they encourage a much more extensive and enriched educational program.

Linoleum Floors and Cove Base

Linoleum floors and cove base make daily cleaning operations simple and effective. There are no difficult corners or cracks to catch and hold dirt. Sweeping may be done with a dust mop avoiding the use of sweeping compounds.

Linoleum floors may be kept attractive for years by a simple cleaning and waxing process, while wood floors require continual maintenance in the form of seals and periodic sanding as well as waxing. They are noisy and do not lend themselves to attractive patterns.

In addition to the use of linoleum as a wainscot and floor covering, it is excellent for use on the work top of compartment cases since it is not damaged by water and is easily cleaned. Here again it lends itself to making a room attractive as well as being easily cared for.

Windows

Reversible sash makes it possible to clean all glass from the inside avoiding the danger of accident and permitting work to be done at any time of year or in any weather. Reasonably large panes make cleaning much easier and reduces greatly the time in painting. Janitors in buildings with small window panes will avoid this job of cleaning with every excuse they can think up, consequently it just doesn't get cared for with any regularity in such buildings.

Marble sills make ideal places for plants so prevalent in an elementary classroom. Children can care for these without fear of damage should water run over or dirt be spilled.

Terrazzo

The terrazzo corridor floor with cove base again facilitates quick, easy, daily care. It will stand up under constant heavy traffic and is not slippery. Because it is impervious and will stand constant scrubbing, it is excellent for use in toilets, lavatories, and shower rooms. During a period of years it will pay dividends over other types of materials.

Sanitation

As mentioned above, these areas should permit of constant, easy cleaning, hence any elimination of fixtures resting on the floor is desirable. Wall hung urinals are greatly to be preferred to the floor installations and wall hung water closets, too, though the question of expense must be considered in the latter. From a maintenance standpoint the reduction of exposed pipes eliminates the temptation to use them as exercising bars in areas used by boys, with resultant breakage. For walls a ceramic glazed structural tile or similar surface is essential.

Janitors' Closets

If a housekeeping staff is to work efficiently, it must have the necessary equipment and a place to keep it close to the work areas. There should be adequate space to keep a week's supply of toilet tissue, paper towels, and soap for the area serviced from each station. There should be hot and cold water in a slop sink that is dropped into the floor so that the securing and disposing of mop water is not a back breaking event. Floor brooms, dust mops,

and other equipment should, of course, have their proper place to be hung and should not be stacked in a corner.

General Storage

Do some of the things mentioned sound trite or commonplace? Within the month I visited a brand-new school which had been occupied less than a year — and where did I find the lawn mower and scrubbing machine stored? You guessed it — in the teachers' lounge. There was not another space in the building to store anything.

There should be a place for racking up heavy drums of soap and other cleaning compounds which, we hope, arrived at a conveniently arranged loading dock. There should be adequate storage for extra desks and chairs, not to mention periodically used project materials seen in every modern classroom, and a place to repair furniture and to make the innumerable things good teachers use in effective teaching.

If coal is used as fuel the bin should be so arranged that dump trucks can drive on the bin and unload in a few moments with no shoveling required. The bin should also be so situated that a wheelbarrow may be dumped directly into the stoker hopper if a bin feed is not used. In this same area an adequate storage room for ashes and clinkers, with an electric hoist, should be available so ashes do not have to be piled outside to be blown about on a windy day or make an unsightly area.

A proper and easy method of disposal of waste paper and garbage is also an essential.

What have these things to do with planning for economical maintenance? Well, most everything. If there is no place for orderly storage of all materials and disposal of waste what little place there is becomes the hopeless jumble everyone has seen. One won't get efficiency unless it is possible to have a well-ordered house from top to bottom.

A Critical Analysis of "American Standard Practice for School Lighting"

*Howard M. Sharp**

In the September, 1948, issue of *Illuminating Engineering* there appears a new "Standard"[1] superseding that issued from the same source in 1938. It is a very extensive work, and this very fact will conceal from the average reader what careful study discloses to be contradictions, compromises, and evasions that will plague the user and offer fertile ground for argument and confusion. The principal sufferers will be the users of the schools.

It is not my intention to set up my judgment against the truly formidable list of sponsors. As a practicing engineer I wish to use this standard but there are recommendations which are inconsistent, and greatly at variance with known fundamentals, thus leaving the designer with challengeable data. However, a competent consultant can take care of himself in these matters because he knows the basic source data. What concerns me is that the conscientious school administrator can quickly become tied in a Gordian knot by the claims and counterclaims of those who have interest in the many aspects of school lighting, but who do not have the background knowledge necessary to clear the confusion.

It is not my intent to minutely dissect the standard, but to confine my remarks to a most important aspect of lighting, that of brightness and brightness ratios and their ally, glare. It is in this area that modern lighting practice has the most to offer the user, and it is in this respect that the Standard fails in its duty.

In discussing brightness ratios the visual task is taken as the reference point. Since the brightness of the task is a product of incident illumination (foot-candles) and reflection factor, some preliminary remarks on the foot-candle values are necessary.

Quantity of Light

The 1938 Standard called for 15 foot-candles in recitation classrooms. The 1948 Standard doubles this value. I believe that sufficient scientific data exists to justify 30 foot-candles in a recitation classroom, but this value is not sacred. Furthermore the Standard states that these values "may be provided by any source — natural or artificial, or both." Daylight in a large percentage of classrooms is not the insignificant factor that many are led to believe. Calculations or observation can pretty well determine maximum and minimum amounts. Where classes are predominantly day classes, these values can be subtracted from the recommended values to give the design point for electric lighting. Long hours of nighttime use may require electric lighting of the recommended value.

This is an important element. The capital investment in lighting is much higher than in previous times. The tendency is to reach for foot-candles at the expense of quality because quality lighting costs more per foot-candle than subquality lighting. Informed opinion inclines to the sacrifice of foot-candles before sacrificing visual comfort. Furthermore the foot-candle values are at the borderline where a little change one way or the other will leave no choice but one light source, introducing the most controversial factor of lighting economics.

With a given value of foot-candles on the task, the tendency is to overrate the reflection factor, thus giving higher values of foot-lamberts (brightness). White, unused paper has a reflectance of about 80 per cent, and this figure is given in all cases where sample calculations for task brightness are presented. Overlaid with writing or printing, however, this reflectance drops to around 65 per cent. Thus the adapting brightness of even the best of school visual tasks under 30 foot-candles is not 24 foot-lamberts, but about 20 foot-lamberts, a significant change when operating at high allowable brightness ratios. Many visual tasks consist of considerably lower average reflectances. It is not good practice to design for the highest reflectance, all of which leads to the opinion that inasmuch as the task brightness is taken as unity, or the reference point in ratios, the allowable values for bright areas should be lower, rather than crowding the maximum.

The Visual Field

The angular extent of the environment subtended at the eye is important in an understanding of brightness. Unfortunately the 1948 Standard adds to the confusion in this matter. It defines the seeing task as the central visual field, said seeing task being an open book, sheet of paper, etc. What then is the angular extent of the seeing task when viewing the chalkboard? The literature on basic visual investigation generally describes the central field as that subtending the fovea (1–2 degrees), where all images are focused for maximum acuity. The "surround" is stated to subtend 60 degrees at the eye, and the binocular peripheral field 120 degrees. An open book or a sheet of paper subtends somewhere between 30 degrees and 40 degrees at 14 inches viewing distance. It thus takes up

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[1] *American Standard Practice for School Lighting*, paper, 79 pp., 50 cents, Illuminating Engineering Society, 51 Madison Ave., New York, N. Y.

so much of the immediate surround as to render uncertain the areas to be considered in brightness ratios.

For example, many classrooms do not use desks, but armchairs. An open book or a sheet of 8½ by 11-inch note paper just about covers the arm. The immediate surround is then the floor, for which the ratio is given 1 to 1/10, whereas if the paper lay on a desk top the ratio is prescribed as 1 to 1/3! As a matter of fact our knowledge of the action of this surround is none too extensive. A desk but 3 feet square subtends about 100 degrees at the seated eye. Experience alone shows that this desk surface should be of high reflectance and uniformly so over the entire surface. The peripheral field is more important than is generally recognized and the oft-repeated generalization that brightness beyond the 30-degree cone is relatively unimportant, covers up much bad design.

Brightness Limits and Brightness Ratios

Table IV of the 1948 Standard gives brightness limits for luminaires. In the 0–45 degree zone 1000 foot-lamberts is recommended. This brightness occurs in direct types of luminaires such as glass covered troffers. Table I states that the brightness ratio of luminaire to background should not exceed 20 to 1. It is not possible to obtain a ceiling brightness with that type of lighting equipment much in excess of 12 foot-lamberts, so such equipment would be ruled out because the best ratio is more than 80 to 1. However in paragraph 4.2.3.4, it is recommended that for other than indirect or semi-indirect luminaires, double the brightness value of Table IV should be accepted. Thus troffers with or without diffusing media would be acceptable, giving brightness ratios of around 200 to 1. There is no justification for such evasion of basic principles.

Table IV

Zone (0 deg. directly beneath luminaire)	*Recommended brightness limits in foot-lamberts**
60°–90°	225
45°–60°	450
0°–45°	1,000

*Comparative values in candles per square inch, respectively, .5, 1.0, 2.

The "Q&Q" committee of the I. E. Society in report No. 1 (*Illuminating Engineering Magazine*, Dec., 1944) shows that at the borderline between visual comfort or discomfort, for 30 foot-candles on the horizontal plane in a room comparable to a classroom the brightness for a fluorescent semi-indirect luminaire should not exceed 565 foot-lamberts. The committee further shows that for a projected bright area of only 1 sq. ft., at 20 foot-lamberts for the task, 605 foot-lamberts is the limiting brightness. Furthermore, the statement is made that "values of brightness about one half those presented" should provide "*fairly* comfortable lighting conditions" for the specific cases considered. It is evident upon analysis of the "Q&Q" report that these brightness values apply to that portion of the luminaire which is within the field of view of one seated at the rear of the room. Just what angular relationship this establishes is not known without specific analysis, but a safe average appears to be from horizontal to 45 degrees below the horizontal. This assumption allows direct comparison with Table IV of the 1948 Standard. At the values given for the 45–60 degree and the 60–90 degree zones reasonable comfort can be expected. If those values are doubled as the report suggests for direct, and semi-direct, and general diffusing luminaires, the door is wide open to lighting conditions which should be eradicated.

Reflected Glare

A number of statements in the 1948 Standard touch directly and indirectly upon this matter. Let it be stated that reflected glare is one of the most common sources of visual discomfort and reduced visiblity, with which we have to contend. It is strange that so little quantitative data is available, thus opening the field to generalization. Reflected glare is manifested by reflections of bright images from the visual task or adjacent surfaces. By eliminating shiny surfaces we reduce or eliminate the more obvious manifestation of reflected glare. But the type imprint on *any* paper, or pencil notations, possesses specular characteristics, and these small specular surfaces when imaging areas of brightness, suffer reduction in contrast with the background and hence loss of visibility. It is for this reason that the lowest possible brightnesses are sought in the 0–45 degree zone, for these brightnesses are the ones to be reflected by the task. Therefore paragraph 4.2.2.5.2. (a) and (b) as quoted below lulls the user to rest by misstating the remedy and throwing emphasis to a type of lighting that more readily violates good practice than any other in classroom use.

Paragraphs 4.2.3.3. and 4.2.3.3.–1 likewise are anything but candid in the explanation given.

"4.2.2.5.2. — Direct Lighting with Fluorescent Lamps"

"(a) Certain types of direct lighting fluorescent luminaires may be so installed that the resultant illumination approaches totally indirect lighting in quality from the standpoint of uniformity of illumination over the working area, the absence of objectionable shadows, and lack of direct glare.[2] Such results are attainable with continuous recessed troffers or ceiling mounted or suspended direct lighting reflector equipment on close centers which provide shielding of the lamps from direct view within normal viewing angles and which present surface brightness in these angles which are within comfortable limits. Such equipment must be very carefully designed and the brightness exposed downward must be limited if it is to qualify. (See Table IV.)[3]

"(b) If desk tops and other furniture have a dull finish, are light in color and the general brightnesses are high because of foot-candle levels of 30 or more, the reflected glare usually found in direct lighting installations will be greatly reduced and satisfactory brightness ratios may be obtained. The direct scheme described also permits higher levels of illumination without uncomfortable ceiling brightnesses.[4]

"4.2.3.3. — *Specular Reflection* — Specular Reflection may be described as the relation of the reflected brightnesses of the luminaire in specular or semispecular work surfaces (such as a varnished desk top) to the brightness of surrounding work area.

"4.2.3.3.1. — *Specular Surfaces* — Specular and semispecular surfaces should be avoided. High luminaire brightnesses may not be objectionable from the standpoint of specular reflections when the desk tops and work materials have a matte finish; yet even low brightness values may be troublesome when reflected from specular surfaces."

Anyone can prove to himself the effect of reflected glare from printed material. Place the work on the usual horizontal work surface, then slowly tilt it upward. Almost always there will be found a point at which the type stands out in sharper contrast with the background. At this point the brightness of the page will almost invariably be less than when it was on the horizontal, thus proving that *lesser* foot-candles give greater visiblity when unaccompanied by reflected glare. Stated another way, reflected glare wastes light, by an amount which can be rather easily determined by anyone with a light meter.

It is true that in the appendix to the 1948 Standard there is found a more extended discussion on reflected glare, which nevertheless skirts the issue. Furthermore, the Appendix is not part of the Standard!

Conclusion

It is evident from even this incomplete analysis that in the most important matter of brightness and brightness ratios the 1948 Standard fails the ultimate user. The difficult way to quality in lighting has not been eased. Those who need to defend brightness and brightness ratios in line with more fundamental knowledge must of necessity utilize basic data. This is not easy to do. Those who find it profitable to be careless of quality in lighting will find the evasions and inconsistencies of the 1948 Standard much to their advantage.

Administrators of educational institutions will be well advised to avail themselves of competent professional skill before proceeding with lighting improvements. Violations of basic lighting principles eventually become apparent to all but the most obtuse. By that time the money has been spent and the visual discomforts visited upon the users.

[2] *Author:* Note there is no reference to reflected glare.

[3] *Author:* Par. 4.2.3.4 allows *double* these values for direct lighting.

[4] *Author:* Not only is no mention made of reflections in the seeing task, but the philosophy is that of emphasis on foot-candles to the exclusion of brightness ratios in the entire field.

Some Observations About High School Building Needs

*B. F. Pittenger**

The writer of this article has had only one experience in the detailed planning of a high school building. This occurred more than a decade ago, and concerned a building designed to house, on a university campus, a school of about a thousand pupils, and to serve the university for practice and laboratory purposes, and the local community as a regular junior high school. His other contacts with high school building problems have been through his work as consultant, from time to time, to school boards in various places in the Southwest. In these contacts he has dealt mostly with the location, size, and general layout of the buildings. But he, like all others who think at all seriously about public school problems, was bound to raise in his mind some questions about high school housing, to observe some trends and conditions, and even to develop a few tentative opinions.

One of the first impressions to reach such an observer is the tremendous size and urgency of the high school housing problem in many local situations. His reading will have acquainted him with certain facts such as (1) the huge backwater of deferred construction and even of needed maintenance, (2) the present saturation of facilities in many places due to the recent moving in of families, (3) the potential large increase in enrollments when the "war babies" reach high school age, and (4) the 50-year-old movement in this country to bring the secondary grades within the scope of the common or universal school. But these facts make one sort of impression when they are read or heard about, and a very different one when they are encountered in the concrete. When a consultant tries to help solve the problems presented by an overcrowded high school building which has not yet been paid for, and which has still not felt the impact of the increased birth rate; a building on a site too small to permit expansion, but in which corridors, basements, attics, and even the spaces under stairways are in constant use thoughout the day; a building which is unresponsive to attempts at rearrangement, and which menaces the health and safety of everybody in it because of its overcrowding and disrepair; when he tries to solve the problems presented by such a building in a community where the elementary schools are equally bad off, and a community which is straining its resources to meet inflationary salary and wage scales, he discovers that the abstractions of the literature have become concrete demons to plague him and keep him awake at night. And when a practicable but unsatisfactory solution has been arrived at in that place and he moves on to another where conditions are even worse, he is forced to draw upon all his reserves of faith and confidence if he is not to lose heart completely.

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Sound Planning for the Future

Growing out of this realistic comprehension of the problem's size and urgency, he feels a disposition to censure these communities for their failure to plan their school plants with foresight and resolution. No doubt in many instances their later growth was unpredictable and their plans would have sufficed for foreseeable changes. But in the majority of cases, at the very time when these communities were boastfully prophesying their future magnificence, they were building school plants which, at the maximum, would be barely sufficient for the then-present needs. While blissfully contemplating a grandiose future, they made no effort to take care of it. Of course, to blame them now for past delinquencies is useless, but if the future is to profit from the past, then the evidences thus supplied of the disastrous consequences of lack of planning must not be overlooked; and it is dismaying to find that many of these communities are still willing to make only the minimum changes required by present-day conditions, and again to leave the future to care for itself. The general psychology of school-plant planning, even today, is that of grudgingly responding to existing pressures rather than of anticipating pressures before they can be felt.

Past experience thus combines with the evidences of present and future needs to emphasize the contemporary demand for sound planning. Unless our communities, including their educational leaders, can throw off their lethargy in this respect, the next generation of school attendants will be less adequately housed than were their predecessors. School plants that are built today must be expansible, flexible, and even replaceable; and, at least on the high school level, as many as possible of their facilities must be available for multiple use. These plants must be presently adequate for today's needs, and must conform to the best known standards for health, safety, and efficiency. Unless they are strictly up to date in all respects, they will be noticeably obsolescent at the start, and will soon be rendered shamefully so by impending developments.

Central Location Inadvisable

The defect in high school plants that possibly impresses a consultant most, is the difficulty of increasing their size to accommodate enlarged enrollments and new school programs. This defect is especially noticeable and serious in the towns and smaller cities, where there is only one such school in each place. That school is frequently located close to if not actually within the business district, occupies at most a block of land, and is surrounded by expensive property that can be purchased, if at all, only at an extravagant price. The building cannot be enlarged without damage to the usefulness of the site, and additions to the latter are out of reach. Yet all proposals to sell the present property — which would frequently bring a good price! — and move the school to a new location, are stymied by public resistance of a sort that many school boards and superintendents are not willing to challenge.

Frequently, the only useful move under these circumstances would be toward the edge of the city in the direction, if that is ascertainable, of its probable future growth. But such a move would increase the distance from the school of a third or more of the present population. Everyone would be in favor of the plan if the new school were located on his side of town; but the town has several sides and can operate efficiently only one high school. The opposition of those farthest removed from the proposed new site, unless it is confronted courageously and overcome, will make change impossible except for a few minor adjustments at the old plant, and the problem will be left to grow in difficulty.

High schools outgrow their physical facilities for several reasons. District populations increase by natural growth, by moving in, and by consolidation with outlying districts for high school purposes. For a long time, excepting for a few war years, high schools have been enrolling a constantly increasing proportion of their appropriate age groups of children. Moreover, many present high school buildings, if even moderately old, were planned to house a conventional college-preparatory program, and hence include no proper space or facilities for the varied activities of a modern school. They have no fit accommodations for vocational instruction, or music and art, or the many important student activities; and their sites would be

too small to serve modern programs of physical education if there were no buildings on them. Even in districts which have experienced no appreciable growth of population, or which may have lost population, the expanded educational program alone often makes more space imperative. Failure to solve the housing problem not only means overcrowded and unsafe conditions; it also means failure to provide the facilities that are demanded by modern secondary education.

Expansible Sites vs. Expansible Buildings

Experience shows that, when a high school has been moved to a wisely chosen peripheral location, the people will move in its direction. Newcomers to the city, and even children of the older inhabitants when they come to set up homes for themselves, will settle in its neighborhood. So marked is this development that, after a few years, one or more elementary schools in the distant parts of town may have to be closed, and new ones established in the new high school area. This is the kind of change that most communities with one centrally located high school must sooner or later face. The tragedy is that too often it is not recognized early enough to serve the needs of several generations of high school children. Frequently, also, because of the delay, the cost of even an outlying site has become almost prohibitive; so that there is danger that again it will be too small.

The foregoing statements have stressed the expansibility of sites rather than that of buildings. If the site is large enough, more housing can be provided; although it may have to be separated from the original structure. In the main, however, except for very old buildings, this writer has found few cases where the buildings could not have been extended if the sizes of the sites had permitted. But when new structures are planned, on seemingly adequate sites, the possible future expansion of both the site and the building should be kept constantly in mind. The lessons of the past in this regard are bitter ones and must not be forgotten.

Flexible Planning

So much space has been given here to the difficulties encountered in trying to enlarge high school plants because, in the situations where this consultant has worked, it has been primary. In some of these plants, however, expansion would have been less necessary if the buildings had been more adaptable to internal changes. In several cases it was necessary to build separate shop buildings and gymnasiums on sites several blocks distant from the main high school plant because the original building, though large enough, could not be rearranged satisfactorily. It had been planned as some new buildings are being planned today, on the premise that the high school program is fixed and unchangeable, and that the different aspects and proportions of that program are known.

These statements lead up to our principal comment concerning the internal planning of new high school buildings. There appear to be two very diverse concepts which are now unconsciously competing with each other in this field. Perhaps the "experts" have them properly reconciled, but many actual school planners have not. One of these concepts is standardization, while the other concerns internal flexibility. Flexibility calls for rooms of various sizes with a minimum of specialized equipment, and for large areas of free floor space which can be readily repartitioned to meet changing needs. Standardization, on the other hand, produces rooms of fixed and usually similar size and shape, each assigned to a specialized function for which it is especially equipped. Flexibility is also limited by numerous over-all standardizations; such as window banking, central heating and ventilating equipment, corridor-locker installations, the channeling of public-address systems, and fixed and even built-in instructional equipment. The essence of flexibility lies in the extent to which each space unit, after each readjustment, can be made self-contained, and to which the different space units will lend themselves to rearrangement and multiple use. In relation to this dilemma, it seems clear that standardization now has the right of way in most new school-building planning, especially in the towns and small cities.

Getting Rid of That Monstrosity

Occasionally one finds a situation where the best solution would be to replace the present building with a new one. The location is satisfactory and the site acceptable, but in everything except durability the present building is bad. Sometimes it has been so recently built that some of the bonds issued to pay for it are still outstanding. But it was patterned after school buildings which, in their day, were patterned after something earlier. It was never well suited to high school purposes and becomes less suitable every day. It should be razed to the rock beneath it, and completely replaced.

Unless one has tried to convince a school board and public that a school building should be destroyed which has not yet been condemned as utterly unsafe to life and limb, he may guess at but can hardly appreciate the reaction. There are those still outstanding bonds! There is that name plate at the entrance, commemorating the school board which was responsible for the monstrosity, whose sons and daughters still live in the community and some of whom may be on the present board! There is all that "waste!" So long as the old building will keep the rain off and the weather out, and contain its occupants with reasonable safety, the school in most cases will have to fit itself into this misshapen shell, however stunted and distorted it may become in the process. Most school buildings are, in fact, not replaceable until they are ready to fall apart.

I am not now trying to urge the wide use of temporary and movable structures, although there is much to be said for them in fluid situations. Rather, I would suggest that where school planners are not ready to give a full commitment to the principles of expansiveness, flexibility, and multiple use, they at least refrain from building structures that, because of their solidity, will hamper the school's development for several generations. If the structure is to be permanent in the usual sense, let it be susceptible to enlargement and modification; if it is not so susceptible, let it at least be replaceable in the not too distant future.

There are many communities where the moving of the high school to an obtainable, satisfactory site really demands that free transportation be provided for the children who are farthest removed from the new school. Where public-transportation facilities exist, effort should be made to work out effective plans with the transportation company. But where there is no public transportation, or where the company cannot or will not provide satisfactory service, there the school authorities should assume responsibility and make the necessary provisions, if the state laws permit. Where these laws prevent such action, they should be changed. Distance may be as discouraging to school attendance in a city as in the open country, and the hazards involved may be even greater. Moreover, the section of the city that has been left in the lurch by the removal of the central high school may well be entitled to some compensation for its loss. Yet the idea that a town or city need concern itself about pupil transportation is likely to be new and unwelcome in most urban communities.

This article makes no pretense of adding to the world's knowledge about the techniques of school-building planning or the technical details of construction and equipment. These are matters of great importance, but this writer has nothing to contribute about them. But he has learned, through a variety of intimate contacts with high school building problems in medium-sized cities, something of the importance of the basic features of planning that have been discussed. If this recital will help to convince school administrators and school board members in such places that these features are important enough to justify the cost and effort involved in securing them, then its appearance here may be justified.

SCHOOL BOND SALES

The Shawnee-Mission Rural High School Dist. No. 16, Johnson County, Kans., has sold a bond issue of $2,335,000 to the City National Bank & Trust Company of Kansas City, at 100.006 for a combination of 2¼, 2½, 2¾, and 3 per cent, at a net cost of 2.7667 per cent.

Silver Side Road School, Mt. Pleasant Special School District, Delaware. — Robinson, Stanhope & Manning, Architects, Wilmington, Del.

Children, Teachers, and Parents Praise Mount Pleasant's New Functional Schools

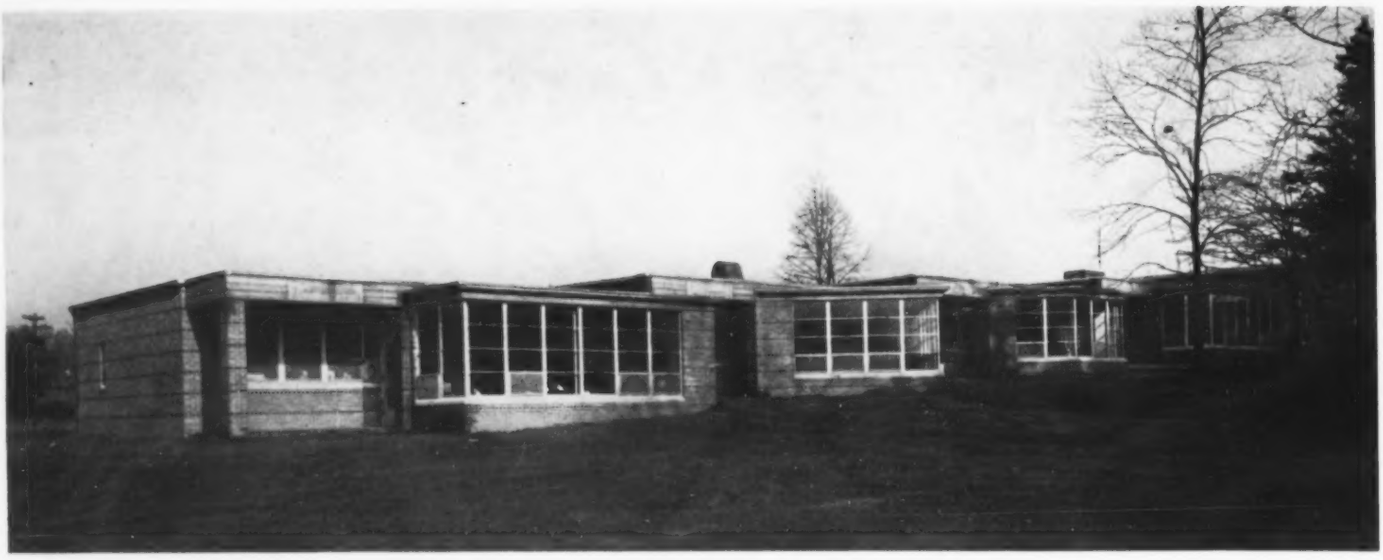
*Ross L. Neagley**

"I like the new school because it's like my house," said little Sarah DeVore, first-year pupil in the new Silverside Road Elementary School, while Bonnie Steinle, upper school pupil in the Edge Moor Road School, writes: "The whole room is not like a schoolroom, but like a fairyland where children come to learn." Parents like them, too, and claim that their children are ready for school long before it is time to leave home in the morning. Teachers helped to plan these new modern buildings and are very enthusiastic about them. Miss Margaret Helmintoller says: "It is truly a privilege and pleasure to teach in a classroom where every facility is available for learning," while Miss Thelma Burnham states: "I have never seen a building so well planned to meet the children's needs and to provide for the activities so essential in a full, well-rounded program of child development."

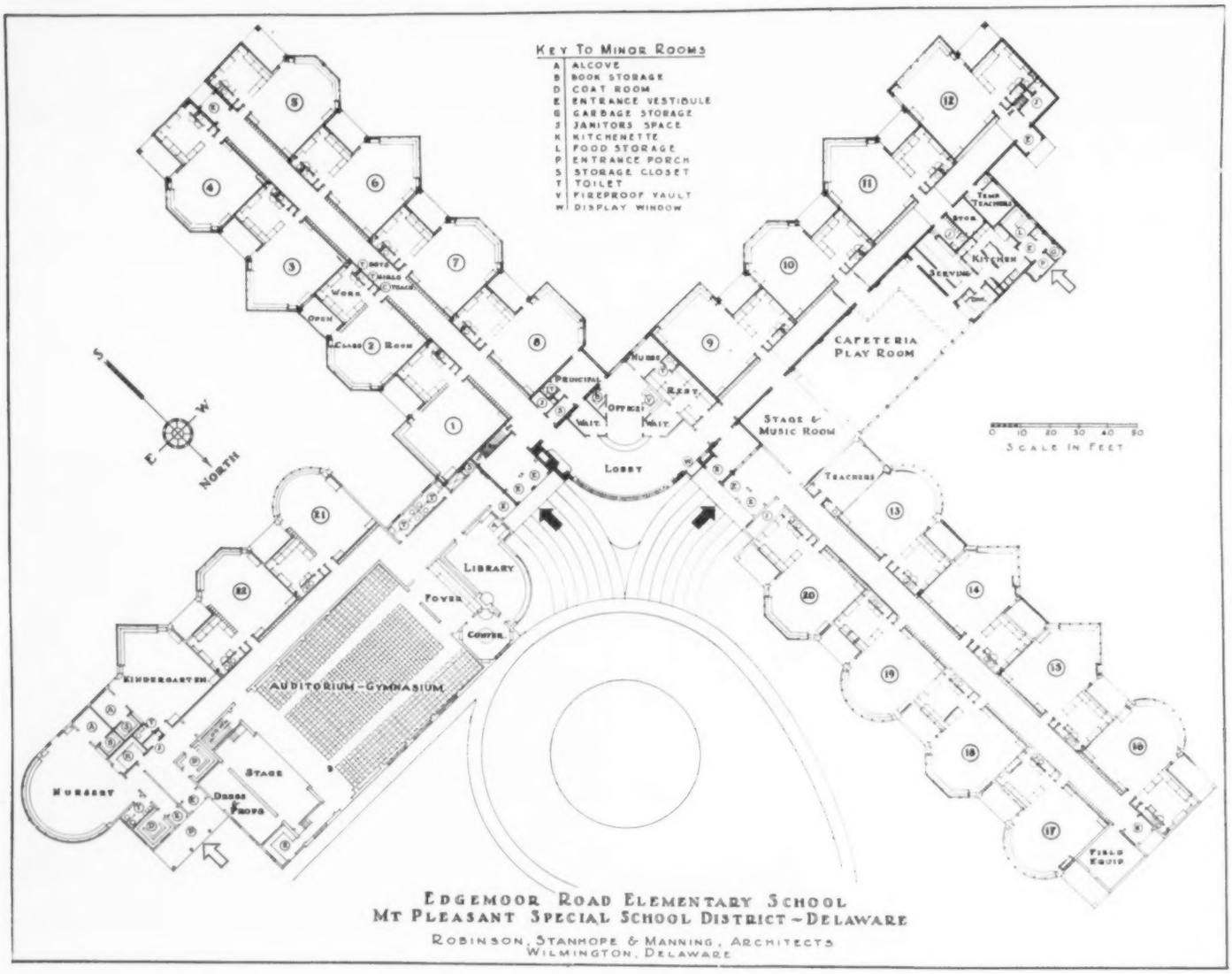
If these comments are typical, those who planned the two new elementary schools for the Mount Pleasant Special School District,

*Superintendent of Mount Pleasant Special School District, Wilmington 280, Del.

The Lobby of the Silver Side Road School is the traffic and reception center of the building.



West Wing, Edge Moor Road School, Mount Pleasant Special School District showing conformation of design to slope of site.



The classrooms provide ideal facilities for happy learning experiences of the children.

near Wilmington, Del., must have achieved their objective to design a building for children based on a modern philosophy of education, in contrast to school buildings of the past. In days gone by, buildings were constructed on a preconceived idea of what a school building should be like, with little regard for the educational program to be carried on in the building.

The two new elementary schools are identical one-story design and plan except that it was necessary to ramp one corridor of the Edge Moor Road Building, because of the sloping site. The color of the brick also differs; one building is constructed of red brick and the other of colonial. Each building has 12 rooms and a large lobby. The sites of 12 acres each will allow ample room for expansion to 24 rooms and several auxiliary rooms.

Every attempt was made to produce a home-like atmosphere. Classrooms have low ceilings and each room is painted a different hue. Children refer to their room as the "plum room," "lemon room," or "blue room" because not only are many different colors used, but there is even variation in shade. Classroom doors are painted the same color as the room and add color to the corridor. Classrooms even vary in shape so that as a child progresses through

(Concluded on page 81)

A classroom looking to the work alcove and toilet rooms.

A typical corridor.

— Photos by Harris & Ewing, Washington

A Pressing Need —

Economy in Planning and Constructing School Buildings

*William Arild Johnson, A.I.A., Architect**

Can school building costs be substantially reduced?

We emphatically say *yes*. There is nothing academic about this question to us, and it is not a theoretical exercise — we are actually doing it all the time. We deny possessing any magic wand to be waved over the plans; anyone can do what we have done. But before we explain the situation, let us generalize a bit.

High building costs are the bugaboo of most school boards in this country. Thousands of plans have been shelved and other thousands have been cut and pruned to fit inadequate budgets. What else to do?

We deeply deplore the defeatist attitude, so prevalent, toward building costs. People assume that high building costs are due to conditions over which they have little or no control, and that nothing can be done about them.

We not only feel that something can be done, but that we have done much already, through research and study in this field, and we expect to accomplish more savings through continued investigation in this field.

Let us announce, right here and now, that we are not talking about "cheapening" a building or eliminating necessary educational features. We are all for expanding necessary and desirable features. We are talking about economies in structure and finish.

Only One Method of Economy

The subject of *future* construction costs is so intimately tied in with our economy that no predictions should be made which do not take into consideration the vast and complex price structure which accounts for the present costs. That, in turn, would involve an examination into the soundness and permanence of our national economy. We do not pretend to be able to make that kind of study, but because the question is so important, we have spent some time reviewing what we believe to be the immediate controlling factors. We shall attempt to set forth results of our review in such a way that the reader may be able to answer his own questions to his satisfaction.

There are four basic elements of construction costs; namely, labor, material, design plus supervision, and finance. Of these four, two may be eliminated at the outset. Money is the only thing that is cheaper now than it was twenty years ago. Any real savings we effect will have to come through design of construction.

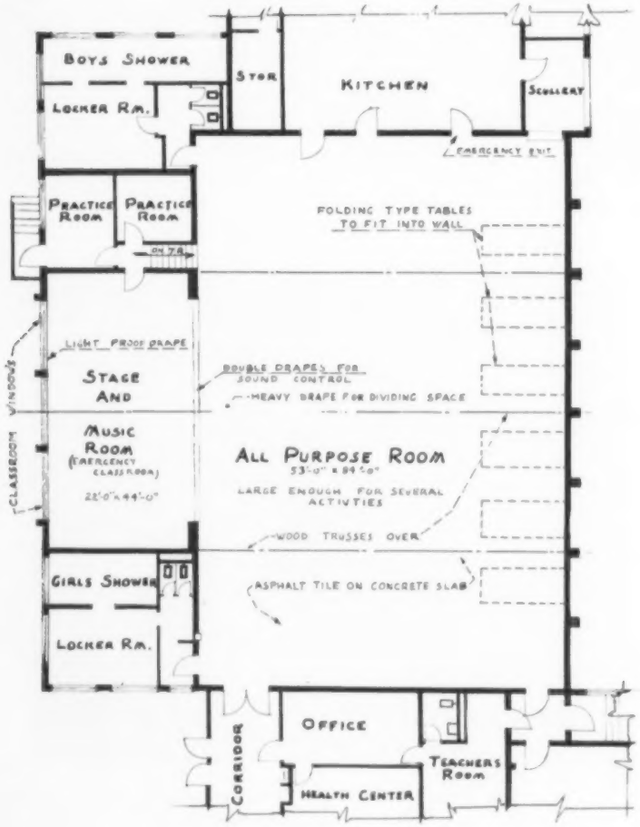
We might try to reduce labor costs, to reduce material costs, and to lower the quality of the building. The last mentioned method is unsound because it causes excessive maintenance and rapair bills which nullify the original saving. There is little indication of reduced costs of labor or material in the near future.

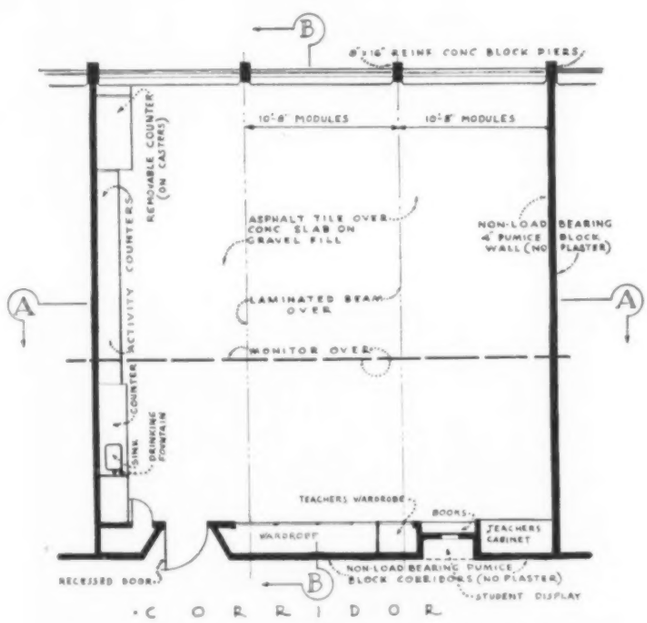
We must accomplish the lowering of building costs largely by *not* using so much labor and material, while retaining the quality of construction.

Economy Starts on the Drawing Board

An essential concomitant is *attitude* — the research attitude. New and better methods will be found if one puts all available experience and talent to:

*Member of the firm of William Arild Johnson, A.I.A., and Harold W. Hall, architects and engineers, Everett, Wash.





Above: Typical classroom, Elementary School, Edmonds, Washington. — William Arild Johnson, A.I.A., & Harold W. Hall, Architects and Engineers, Everett, Washington.

Left: Floor plan all-purpose room and adjoining service rooms, Elementary School, Edmonds, Washington.

Exterior of the Elementary School at Edmonds, Washington, has the exposed concrete block wall painted with an oil paint. The design is notable for the functional simplicity of the lines. — William Arild Johnson, A.I.A., & Harold W. Hall, Architects and Engineers, Everett, Washington.

1. Designing as economically as possible, consistent with the function of the building

2. Cost designing every possible structural combination for which materials are available

3. Testing all combinations of exterior and interior finishing materials to determine the simplest and most economical combination that will serve the purpose, stand punishment, and retain a pleasing appearance

This research costs the architect extra money, of course, but we won't discuss that here. Maybe it's just too bad for the architect!

Now, for some specifics. We must confess that these aren't all our own ideas, but we try to use them all. Most of them we picked up in 25,000 miles of travel around the country during the past two years, looking at new schools and observing new trends and ideas.

We realize that outmoded building codes in some of the larger cities are a hindrance to economy, but even so some of the things we advocate hereafter can be practiced. However, we are concerned in this discussion mainly with the great preponderance of school building which is scattered throughout the smaller cities and villages of America, which are erected generally under codes that are not too restrictive.

Better Space Utilization

Most important, it goes without saying, is wise and intensive space utilization. As much space as is feasible should be developed as "multiuse" purposes. This may even go so far as to include a so-called "multipurpose" room in grade schools. We agree that this is a compromise solution at best, but it does save a lot of money. Using one space for play, assembly, lunching, and gymnasium and physical education activities is not ideal, but it is being successfully done in many communities that must wait until more funds are available for more specialized spaces. Another example is the stage. There is no reason for it to stand idle except when it is used as a stage. It can be provided at the proscenium with sliding doors or with heavy drapes that will make it useful as a visual aids room, or band room or emergency classroom, even with some other activity going on in the all-purpose room. If the back of the stage is an outside wall classroom windows can be put in. These can be darkened by heavy drapes when the stage is used as such.

Pompous and monumental façades are giving way steadily to exteriors with clean, simple, and functional lines. Reduction of masonry is a great money saver. The use of glass not only provides more and better daylighting, but a square foot of glass costs less than a square foot of masonry.

Right here, I should like to say a few words about the "looks" of buildings. It is a paradox of human nature that we are constantly on the lookout for something new, but cling tenaciously to old timeworn

A typical classroom in the Elementary School, Edmonds, Washington, showing the simplicity of the roof construction using laminated glued up girders and exposed concrete block walls.

methods, and only reluctantly accept change. Most school districts have overcrowded buildings and are short of funds. Still we, all too frequently, encounter a resistance to change and a reluctance to part with old timeworn and expensive modes of construction. Of course, materials have a profound influence on design, but the design that results from the use of new methods and materials does not often enough coincide with some superintendents' and board members' ideas of what a school should look like. This concern with "looks" is one of the most extravagant luxuries in which a superintendent and a school board can indulge. Use of new methods and materials will inevitably result in new "looks" that people will just have to get used to.

Factory-like Appearances

Many of the newer schools are almost factory-like in their appearance. But is that bad? A really modern factory is just a nice, light, pleasant place to work. Aren't school children, in the process of learning, entitled to as much, even at the risk of having the schools look like "factories"? The most conspicuous characteristic of a factory is its large glass area, and its apparent lightness of construction. Its lightness is due to the fact that every pound of material is engineered — enough material to take care of stresses and strains, but nothing put in just to make it "look" like it is strong. And factories don't fall down. It is the same way with suspension bridges and airplane wings. Engineers carefully calculate just enough material to make them very safe, even if they "look" light and weak. We must "engineer" school structures the same way and not waste material just trying to make them "look" strong. We need more glass, especially in the northern latitudes!

So much for the exterior. The interior can be made as homelike as you wish, using lots of color and pleasing finishes.

Square Classrooms Economical

Keep your schools one story wherever practicable, and where space allows. There are so many advantages in one-story construction, too numerous to mention here, that we will just point out (*a*) that more economical and lighter construction can be used; and (*b*) the necessity for fireproofing is eliminated. All the floor area is usable; nothing is lost for stairways, ducts, etc. After all, it is usable square foot area you are out to buy, not cubic feet of building.

In a square classroom the economies are apparent. The shorter length of the room provides a more economical plan of the entire building, as the rooms do not project as far into the valuable playground space on the site. Shorter classrooms reduce the length of water, sewer, and electrical lines, arcades or covered passages, and bring the administration unit closer to classrooms, which would provide better supervision of the school plant. The corridors are shorter and there is slightly less exterior wall. The arrangement provides for a maximum of space enclosure with a minimum of surrounding wall.

Transportable buildings are too big a subject to discuss here, but it might be mentioned in passing that the costs have been disappointingly less than that of good permanent construction, but the structures have the advantages of transportability to the area to which the need has shifted. There we have a problem mainly for large cities which expect population shifts. But for them, it is a partial, quick solution to the shortage of teaching space.

Cost of exterior materials effects construction very greatly. Most people seem to think a school must be brick, but there are many other materials and combinations. We have used concrete blocks with success, and this material has proved to be most economical construction. Next in line comes frame and stucco. Nineteen forty-eight costs per square foot of building in the state of Washington are as follows: for exterior work: concrete block, $9.50; frame and stucco, $10.57; all brick, $11.57; brick over concrete, $12.50; all frame, $12.50; brick over tile, $13.50; brick veneer over frame, $14.50; solid concrete, $16.50.

Use stock items as much as possible. There are so many perfectly satisfactory standard items of all kinds that there is no need of going to the expense of having special ones made.

Simple Roof Treatment

Keep roof framing and roof lines simple. Abandon old complex joint-and-rafter framing. Mill-type construction, using T&G material, is much simpler. By using bilateral or clerestory lighting it is possible to lower the traditional ceiling height considerably, thus effecting a great saving in cubage.

Don't let the roof break out in a rash of sheet metal in the form of ducts, skylights, vents, etc. Consolidate ducts inside the roof and bring them out to the ends of the building, or at worst, have a few large vents rather than a multiplicity of small ones. It not only saves a lot of expensive flashing, but will save on upkeep of the roof.

Reduce on-site labor by prefabricating as much, and in as large units as is practicable, in the shop. Shop labor is more efficient, by working under cover where repetitive methods are used. Construction will be considerably speeded, especially in inclement weather.

Design in modules and repetitive units. Construction will be simpler and more rapid if structural spaces are regular and repetitive.

Don't specify expensive and hard-to-get materials. Delays are costly and disappointing. There is no use specifying anything you can't get, and it is expensive to call for materials that are extremely slow of delivery. Make the most use of what you have on hand. By reducing the use of steel to a minimum we have found that bids are substantially lower because of the speed of erection. Waiting on slow steel deliveries can be very costly.

Don't waste nice finishes in storage or locker rooms or other rooms of common or utilitarian nature. People won't see them and they will get scuffed up anyway. Don't cover one expensive material with another. I have seen expensive plaster jobs covered with blackboards, corkboard, cabinetwork and other permanent installations.

Reduce Number of Crafts

One of the biggest single savings we know of is reducing the number of crafts.

The rear elevations of a typical classroom in the Elementary School, Edmonds, Washington, showing the clean cut arrangement of the storage cabinets, work table, and sink.

The more different things that have to be put together, the more expensive and complicated it is. One of the most difficult things in the world to achieve is simplicity. Anyone can make things complicated, but it takes real ingenuity to make them simple and workable. As Henry Ford is said to have remarked, "The attics of the world are full of complicated failures." For instance, by the use of pumice block or cinder block interiors, we have completely eliminated the use of plaster for the time being, because of the long expensive delays in delivery of rock lath and plaster. There is only one operation to putting up a good pumice or cinder block wall, which provides a satisfactory, pleasing, and enduring surface. This has been a common practice in schools in Detroit for years.

Use lots of glass. There is much less labor in putting up large pieces of glass than there is putting up a wall. And daylight is cheaper than electric lights. Incidentally, we do not consider the use of glass block extravagant, especially in the northern latitudes. Glass block obviates the necessity of drapes, curtains, etc., because of its glare-reducing qualities, and because it saves both on heating installation and operation.

Keep concrete forms simple. All corners and projections cost money. Use concrete slab on gravel fill, and cover with asphalt tile. Provide large unbroken floor slabs and eliminate interior bearing walls, curbs, pedestals, and other projections above the slabs that would obstruct rapidity of pouring and finishing. It is a lot cheaper to pour and finish one large slab than a number of little ones.

Maple is an ideal floor for classrooms, corridors, and especially gymnasiums. However, since the war, the quality has not always been good, the supply has been scant, and the prices high. Linoleum is excellent for classrooms and corridors. The heavier grades have been hard to get, but prices are not out of line. It is asphalt tile that has really come to the fore. It is an ideal material to place directly on concrete slabs, even if there is some dampness, because of its water resistant properties. It is the most reasonable floor that can be had. It is easy to lay and there is a wide range of colors. Moreover, it is easy to repair. One has only to pull up the square or squares damaged and replace them.

Wall Construction

Eliminate parapet walls. They are expensive. Instead, run the roof out as an overhang. That will not only save a lot of masonry, but a great deal of expensive flashing and subsequent upkeep.

Eliminate interior bearing walls. Get the structural frame and roof up first, then come in later and put in removable partitions that will permit easy alteration at some future time, when requirements change. This permits the building to get under roof as soon as possible. Then, most of the work can be done under cover. All it takes is a few columns to hold the roof up, but no interior bearing walls. The flexibility provided will be appreciated at a future time, because educational philosophies and teaching methods are in a state of constant flux and change.

The kindergarten of the Elementary School, Edmonds, Washington, has laminated glued up wood girders to support the roof. These are not cased — only painted. The floor is asphalt tile over a concrete slab. The side wall is pumice block construction covered with acoustic material.

Standardize and simplify millwork as far as possible. The more classroom millwork that is identical, the cheaper it will be. Use stock sizes of windows and as few different sizes as possible.

Some painting can be deleted. Some large areas can be left unpainted for the time being, and other areas need receive only a one-coat job of painting. There are paints that will do the right job in one coat. When building two or more schools simultaneously, standardize interchangeably on construction, millwork, windows, etc. And standardize on whole classrooms. Quite a saving will be effected if all work is let under one contract.

Instead of using hard-to-get and expensive corkboard, try monks' cloth or other light colored, cheap, cloth-mounted overcane board. The cloth will have the further advantage of being lighter in color, thus reducing brightness contrasts.

Lighting is too controversial a subject to get into here. Both incandescent and fluorescent lighting have their advantages and their proponents. They are both widely used. However, incandescent light is much cheaper of initial installation.

One General Contract Best

Eliminate as many metal specialties as possible. Elimination of plaster will automatically eliminate corner beads, cornerites, grounds, etc. Most specialties made of steel are still in very short supply.

Have construction all under one general contract. The practice of separate bids for general, mechanical, and electrical work is questionable economy. There is a loss of concentration of responsibility. The general contractor cannot be fully responsible for subcontractors not under his jurisdiction. All of our most economical jobs have been built under one general contract. The main reason for this is that most contractors are reluctant to bid split contracts and many of them refuse to bid at all under such circumstances. The result is that there are fewer bidders and less intense competition for a given job. Most contractors don't have to take the job that way; there are plenty of jobs they can get in one complete contract.

Another thing that affects bidding is the time of year when bids are called. We realize that this element is very difficult to control, but the fact remains that it is a great advantage to call for bids during the winter months. There is less competition then with home building and other types of construction. Most contractors are looking for jobs in winter, and labor is generally more abundant and efficient than in summer.

The type of heating is one that will have to be chosen after carefully considering all factors involved. While lots of "zoning" is desirable, it should be pointed out that complicated controls cost lots of money.

Don't use expensive materials when less expensive ones will do. For example, it is not necessary to use No. 1 lumber every place. There are lots of places where No. 3 or No. 4 will be perfectly satisfactory.

Now, assuming that we have incorporated every conceivable and practicable economy in our plans and specifications, we are not going to benefit unless the con-

(Concluded on page 80)

General View, Fern Creek Elementary School, Orlando, Florida.—L. Alex Hatton, A.I.A., Architect, Orlando, Florida. The simple horizontal lines of the building are relieved by interesting brick work, the judicious use of color, and excellent materials throughout.

Orlando Gets a Modern Streamlined School Building

*Judson B. Walker**

Early in 1946, the school board of Orange County, Fla., was faced with the necessity of constructing a new elementary school building in the northeast section of Orlando, the City Beautiful, with a population of 70,000, due to greatly overcrowded conditions in all of the city's elementary schools.

Fortunately, the board foresaw this need about 12 years ago when it purchased an 8-acre site in this area for $2,500—a site that would cost $25,000 today according to present real estate values.

The first problem confronting the board in planning the construction of this building was that of finance. Three years ago the freeholders of the city defeated a bond issue for the purpose of financing a building in this section. Facing this defeat, the board called on the people to vote a three-mill building reserve fund, or "pay-as-you-go" fund, at the next regular election. This millage election was carried by a big majority, and within three years it had produced enough money, together with other matching funds from the district, to pay the cost of the building.

With a suitable site in possession and with adequate funds on hand, the board employed L. Alex Hatton, local architect, to prepare the plans and specifications for the building. The architect was requested to use the latest developments in school design, and to plan for a single-story, durable building as nearly maintenance free as possible.

The first unit of construction was to meet the following room requirements:

1. Twelve classrooms for grades 1–6
2. A cafeteria to seat 200—three shifts anticipated
3. A library to seat 60
4. A central heating plant
5. A principal's office
6. A health clinic, and
7. A teacher's lounge room

An auditorium, four more classrooms, and other special features as may be noted in the accompanying floor plans, are to be added later when funds are more plentiful and building costs more reasonable. All classrooms are sufficiently large to furnish ample working space in the rear in addition to adequate regular classroom teaching space in the front.

Key school people including teachers, the principal, parents, school board members, the school superintendent and representatives from the state department of education were invited to study the plans and to make suggestions for improvements during all stages of preparation and construction.

The Fern Creek School was constructed with light walls of all classrooms facing north, with a 10-ft. ceiling height on the north and a 12-ft. wall height on the south, giving a sloping ceiling. Clerestory windows were provided on the south wall above a covered walkway. All light from the south is reflected upward to the ceiling and thence down to desk level. South light is reflected by means of Venetian blinds. This bilateral lighting gives all classrooms 40 foot-candles of light over the south row of desks on cloudy days.

It will be noted from the floor plan of the

*County School Superintendent, Orange County, Florida.

entire project that it resembles an airplane with the two east-west classroom wings serving as the wings and the center group of cafeteria, library, and auditorium acting as the fuselage. With this type of plan we have the units which serve the entire student body centrally located and easily reached from any part of the building. Ordinarily children leave their rooms only for the lunch period and for group gatherings in the auditorium, except for the usual play periods.

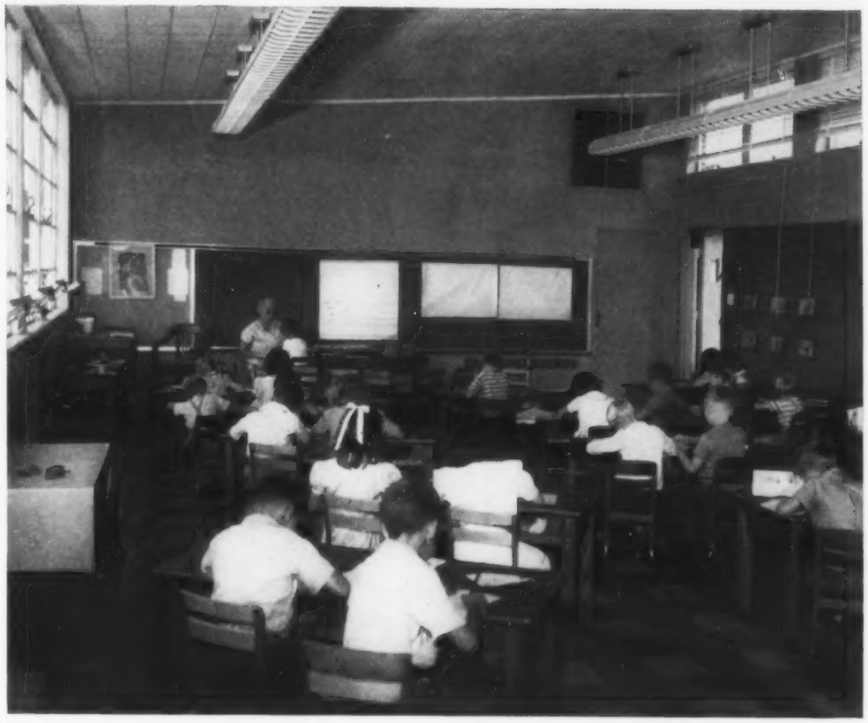
Two large patios are provided between the classroom wings. They will be landscaped and may be used for showing movies at night. The primary rooms are located in the south wing. Outside patio space adjacent to these rooms is provided for special open-air teaching for all primary children.

Special Points Regarding Construction

It was felt by the architect that certain usual basic costs could be saved by deviating from the normal type of construction. With this thought in mind, plastering (plenty high down here) was omitted except for the toilet rooms and kitchen.

Cavity wall construction was adopted, with four inches of red brick for outside face, three inches of air space, and four inches of brick and concrete block for inside. Inside walls were painted. Openings were left in the head joint near the floor level for air circulation in the cavity area. Openings were provided, farther up the wall in protected areas, to accelerate air circulation.

It was found that with the high price of good lumber, it was almost as cheap to use fireproof materials in the construction of this building as wood. Bar joists span the classrooms, with steeltex and four inches of concrete making up the roof deck. A 20-year built-up pitch and gravel roof was placed over this combination of steeltex and concrete. The underside of the joists were furred with 1 by 3-in., wood strips and acoustical tile board was placed as overhead ceiling.



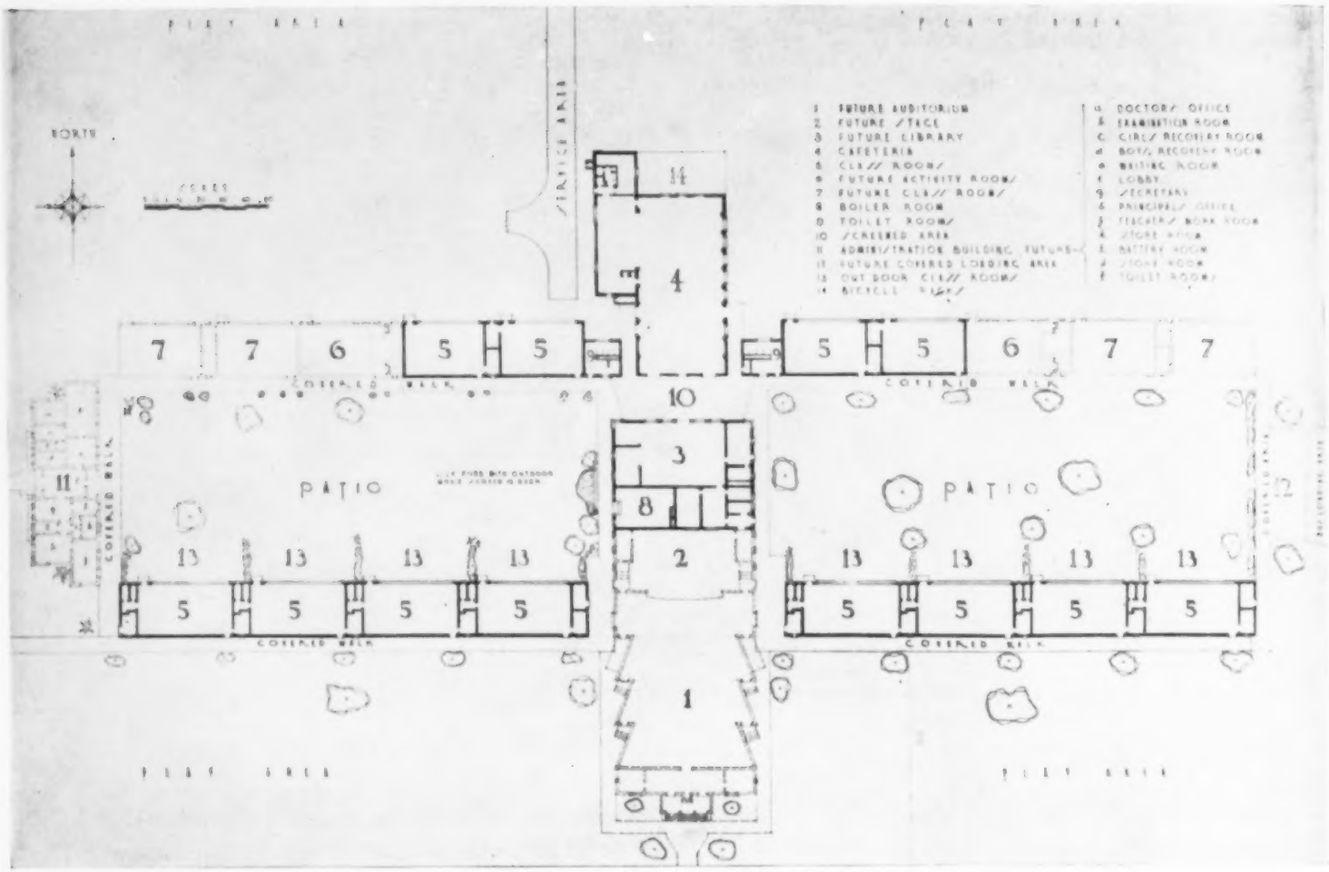
A typical classroom illustrating the natural and artificial lighting.

A soft pine was used to provide a solid wall of tack space for the primary grades.

Mechanical System

A. *Heating.* Provision was made for low pressure steam to be fed from a central boiler room, through lines concealed in the attic

Architect's model of the Fern Creek Elementary School showing the ultimate expansion of the plan, landscaping, and parking area.



Floor Plan of the Fern Creek Elementary School, Orlando, Florida. — L. Alex Hatton, A.I.A., Architect, Orlando. Every essential instructional, health, activity, and administrative service of the school is provided in the original incomplete building. An auditorium, additional classrooms and an administrative unit will be added as the enrollment grows.

area and returned through a line buried in an outside trench. Recessed convectors were used with unit heaters provided for the cafeteria. Controls are used to anticipate changes in temperature.

B. *Ventilation.* A simple yet effective ventilating system was provided for all classrooms by installing an attic type fan in the area over the cloak rooms (ceiling height for these rooms 7 ft. 8 in.).

The lunchroom is attractively finished; the furniture is of the most economical type; the room is adequately lighted; acoustical materials on the ceiling and an asphalt tile floor make the room quiet.

C. *Lighting.* All main rooms are lighted with egg-crate type of fluorescent light fixtures.

D. Acoustical tile board was used for all classroom ceilings.

E. Each classroom has a conduit to provide for the use of audio-visual aids. Portable equipment will be provided.

F. Each room is wired for a public-address system with the controls in the main office.

Materials and Finishes

Footing, reinforced concrete; floors, 4 in. concrete on earth fill; floor covering, all rooms asphalt tile except toilet rooms which have ceramic tile; all walls, painted brick and block except toilet rooms and kitchen which have wainscot of glazed structural tile. Windows, steel architectural projected for classrooms and cafeteria, other rooms steel double-hung; chalkboards, green glass with aluminum chalk trough and trim; bulletin boards, either white pine or homosote boards; ceilings, acoustic tiles or fiberboard. Outside walls, red common brick; all roofing, 20-year pitch and gravel.

General view of the Fern Creek Elementary School looking toward the northeast, showing outdoor corridors and clerestory supplementary lighting.

A bright and cheerful color scheme was used. Classroom entry doors are painted a canary yellow, with black design around doorknobs. Inside of all classrooms two shades of light green were used according to light source.

The brick wall is exposed in the principal's office, with dusty rose plaster for the other three walls.

Library, south wall is painted a dusty rose, other walls light wedgewood blue. Reading and conference rooms are painted canary yellow.

Cafeteria, north wall is painted a canary yellow, other walls robin's egg blue.

Toilet rooms were done in peach color.

Additional Points of Interest

Steel pipe columns, doubled to relieve monotony and latticed to serve for vines, were used for supporting the covered walkways.

The cloak rooms are ventilated and lighted with combination copper louvers and glass block.

Individual toilet rooms were provided for Grades 1 through 3, off of each classroom. Sinks were used in lieu of lavatories with bubblers.

Concrete shelves were provided for each classroom — for potted plants and vines on outside walkway.

Large screened area between cafeteria and library provides ideal play area in case of rainy weather.

Cost Data

Total Construction Cost	$209,750.00
Total Cubic Feet, 296,765 (walkways figured at ¼" cu. ft.)	.70½
Total Square Footage, 23,939 (walkways figured at ¼" sq. ft.)	8.75

Better Housing of Country Children Through Centralization

*Graydon W. Yaple**

"Every rural child has the right to attend school in a satisfactory, modern building. The building should be attractive, clean, sanitary, safe, equipped with materials and apparatus essential to the best teaching, planned as a community center, and surrounded by ample space for playgrounds, gardens, landscaping, and beautification."[1]

In a recent study of centralized and non-centralized school service areas, the housing provided for school children was carefully compared.[2] The 11 12-grade buildings in the centralized areas of New York State and the 7 12-grade buildings in the non-centralized areas were scored by means of the Holy-Arnold *School Building Score Card*, using the authors' standards for school buildings.[3]

Thirty-eight of the 40 small rural buildings in the non-centralized areas and 14 of the 15 small rural buildings in the centralized areas were scored by means of the *Butterworth School-Building Score Card*, using the author's standards.[4]

Since a building program, involving either completely new buildings or the enlargement and remodeling of existing buildings, resulted from every centralization, it was to be expected that the buildings in the centralized

*Head, Education Department, Wilmington College, Wilmington, Ohio.

[1]National Education Association, *The White House Conference on Rural Education*, Washington, D. C., 1944.

[2]Graydon W. Yaple, "A Comparative Evaluation of the Educational Facilities and Programs of Certain Centralized and Non-Centralized School Service Areas in New York State," Unpublished Doctor's thesis (Syracuse, N. Y.: Syracuse University, 1948).

[3]T. C. Holy and W. E. Arnold, *Standards for the Evaluation of School Buildings* (Columbus, Ohio: The Ohio State University, 1936).

[4]Julian E. Butterworth, *Improving the School Building Facilities of One- and Two-Teacher Districts Through Measurement*. Extension Bulletin No. 52 (Ithaca, N. Y.: New York State College of Agriculture, June, 1922).

A well equipped industrial arts shop is a feature of the school.

The health unit is served by doctors and dentists.

areas would be generally superior to those in the noncentralized areas. The purpose of this article is to point out the respects in which the buildings were superior and the influence of the better building facilities in making a superior school program possible.

Twelve-Grade Buildings

No doubt every building surveyed was the pride and joy of the community when it was built, and reflected advanced thinking as to suitable educational facilities at that time of erection, tempered somewhat by the exigency of economy. The oldest building, built in 1886, and all others erected before 1937, had been added to or remodeled, but suffered from handicaps inherent in the original structure. Six centralized buildings and one noncentralized building had been erected in the past ten years and none of these had been altered.

The average age of the original buildings in the noncentralized areas was 36 years and the average age of the 7 additions was 17 years. The original centralized buildings averaged 16 years of age and the 6 additions averaged 12 years of age. As a group the noncentralized school buildings were old and the centralized buildings were new, although there were exceptions in both groups.

The School Site

Utility and beauty both dictate a spacious and well-developed site for the school building. Sites for the 12-grade building should contain a minimum of six acres of usable land, and should be developed to include an attractive setting for the building, ample parking space, appropriate playground and sports areas, and facilities for gardens and agricultural experiments.

The sites for the centralized school buildings were generally isolated from objectionable noise and traffic hazards, regular in shape and well drained. Some of those in the noncentralized areas were so small as to place the buildings close to noisy, heavily traveled streets and were often irregular in shape, indicating that the site, as well as the building, had been subject to additions.

In size, the sites ranged from three-fourths acre to 39 acres, those in the centralized areas averaging 16 acres and those in the noncentralized areas 5 acres. One centralized school and three noncentralized schools had sites smaller than the six-acre minimum.

The use of the site to enhance the beauty of the building through appropriate landscaping was universal in the centralized areas, ranging from modest but effective arrangements to the beautification produced by a well-known landscape architect. In the noncentralized areas, landscaping was often a neglected feature.

The improvements on the sites for the centralized buildings not only provided more desirable features but were so arranged as to provide for maximum utility and conservation of space.

The average score card score for centralized sites was nearly twice the average score for the noncentralized sites.

Academic Classrooms

The characteristics of academic classrooms have received much study and as a result modern standards for the classroom, where the student spends so much of his school time, give emphasis to the size, shape, color scheme, lighting, seating, and equipment which will make it a pleasant and efficient place to do schoolwork.

The average classroom in the centralized buildings met these modern standards to a much greater degree than did the average classroom in the noncentralized buildings. The score for classrooms in every centralized building exceeded the score for classrooms in any noncentralized building, and the lowest score for centralized school classrooms was three times the lowest score for noncentralized classrooms.

Contributing to the low scores in the noncentralized buildings were rooms that were too high, of odd shapes, with insufficient glass area, poor window arrangement, insufficient artificial lighting, opaque top-hung shades, worn and dingy wood floors, flimsy doors, and dark or soiled paint and woodwork. Blackboards, bulletin boards, storage closets and bookcases were frequently lacking, in poor condition, or of insufficient number. Ancient, fixed seats of the nonadjustable type were all too common.

In contrast, the classrooms in most centralized buildings were of correct height, the long axis of their rectangular shape parallel to the outside wall. Banks of mullion windows extending well toward the ceilings gave an abundance of natural light, readily controlled by center-hung, double shades of translucent material. The hardwood or linoleum floors were light in color and well protected by seal and wax. For greatest light reflection, hard plaster walls were painted in pastel shades and the ceilings, often treated with acoustic material, were white. An abundance of blackboards, bulletin boards, bookcases, and storage cabinets promoted efficiency, and the seating was generally both movable and adjustable.

Special Classrooms

The curriculum of the modern high school, if broad enough to meet the needs of pupils of differing interests and abilities, includes subjects requiring specialized facilities. A science laboratory, a home-economics suite, a commerce room, an industrial-arts and agriculture shop, an art room, and a music practice room are minimum essentials. While some of these may be combined, the combination requires careful planning to avoid loss of efficiency.

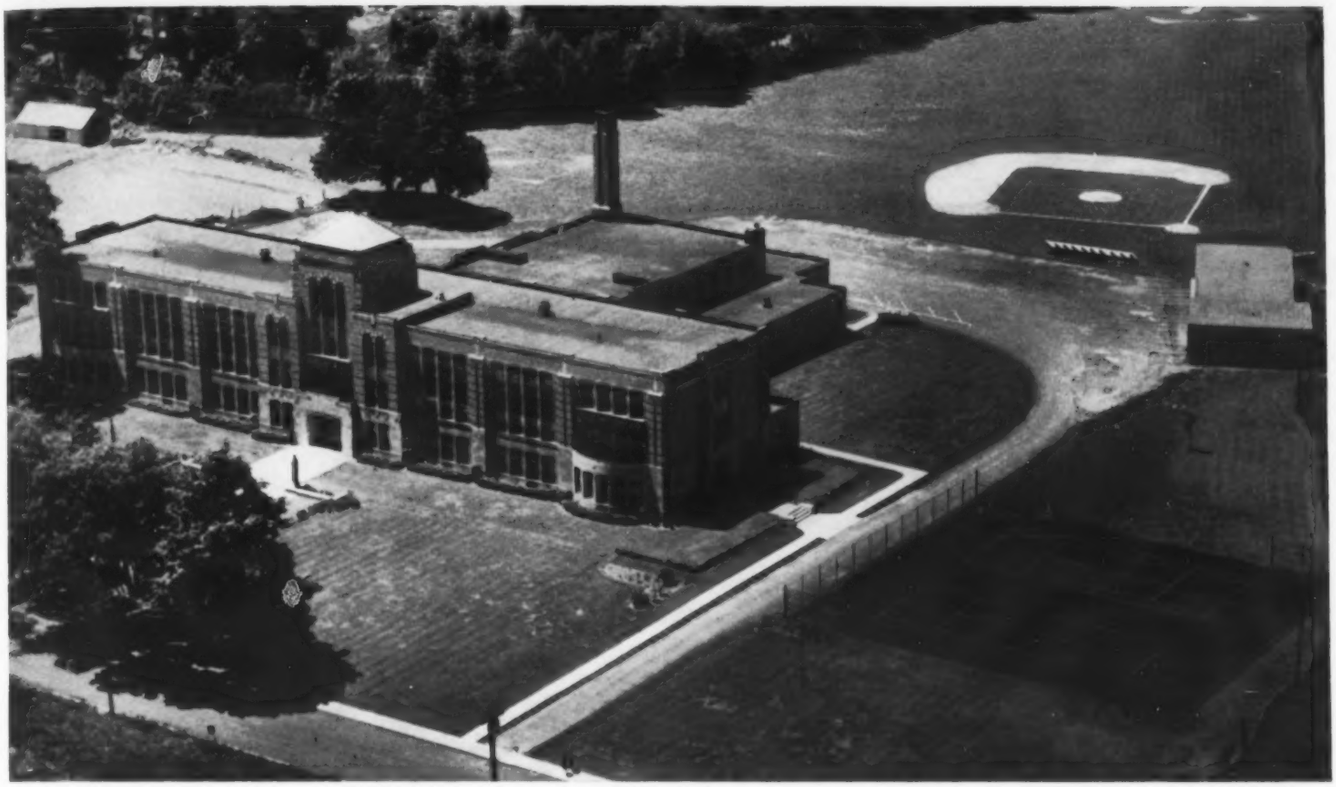
All buildings surveyed had a room designated as a science laboratory, the most common type being a combination used for all sciences. In the older noncentralized buildings it was usually inadequate in size, necessary equipment, and storage space.

Each of the centralized buildings and five of the noncentralized buildings had special facilities for teaching home economics. The newer buildings usually had a double size room with one end a model home and the other a foods laboratory. Two schools, one centralized and one noncentralized, provided separate cottages for home-economics teaching.

Agriculture shops were provided in each of the centralized buildings and in four of the noncentralized buildings, but industrial-arts shops were less in evidence, only four centralized buildings and two noncentralized buildings affording such facilities. Some of the agriculture shops contained industrial-arts equipment and were used for general industrial-arts courses.

Special facilities for music and art were much more frequent in the centralized buildings, all providing practice space for music groups and all but one having a special room for art work. In the non-centralized buildings, only five afforded practice space for music and only one had an art room.

A common arrangement in the newer buildings, advocated as an economy measure by the New York State Education Department



The Cuba Central School, Cuba, New York, occupies a central site which provides play area for the community as well as for the children enrolled in the school.

but condemned as unsatisfactory in the schools, was to utilize a raised platform at one end of the lunchroom for large music groups. This required constant rearrangement of lunch furniture and moving the larger band and orchestra instruments. Equally undesirable was the use of the stage of a combination auditorium-gymnasium while physical education classes or intramural games were in progress. Some schools had resorted to the use of basement rooms or regular classrooms to offset these unsatisfactory facilities.

Each of the centralized buildings and all but one of the noncentralized buildings had a room devoted to the various business subjects. The typewriter desks with folding tops made the room usable for a variety of activities.

As essential to the modern elementary school as are the above facilities to the high school, is a kindergarten room. All but one centralized building provided such a room but only three of the noncentralized buildings provided one.

The average score for special classrooms in the centralized buildings was nearly twice that of the corresponding score in the noncentralized buildings. There was little doubt that lack of special facilities was an important factor in the failure of the noncentralized schools to provide adequate curricula.

General Service Rooms

In addition to special classrooms for certain subject matter offerings, modern schools require auditoriums, physical education rooms, libraries, and cafeteria suites. In 12-grade schools these are used by the entire student body as well as adults in the community, thus providing a general service. The centralized schools made much better provision for these service rooms than did the noncentralized schools.

Each of the centralized buildings and all but one noncentralized building had an assembly room and stage. Typical was a gymnasium with a stage either on one side or at one end, the floor being set with folding chairs while used as an auditorium. The conversion took considerable time and energy and did not provide a satisfactory assembly room. The two largest centralized schools and the largest noncentralized school were fortunate in having separate auditoriums with theatrical seating.

Gymnasiums were generally adequate, all centralized schools and all except one noncentralized school having one that was satisfactory. Satisfactory shower and dressing rooms were provided by the centralized schools and by three noncentralized schools. Three other noncentralized schools provided showers which were unsatisfactory in size, sanitation, and ventilation. Corrective physical education rooms were provided by four centralized schools and one noncentralized school. Physical education offices were found in all centralized buildings, but in four noncentralized buildings. Storage rooms for physical education equipment were found in 10 centralized and four noncentralized buildings. Only one centralized school had a laundry. None of the schools boasted a swimming pool.

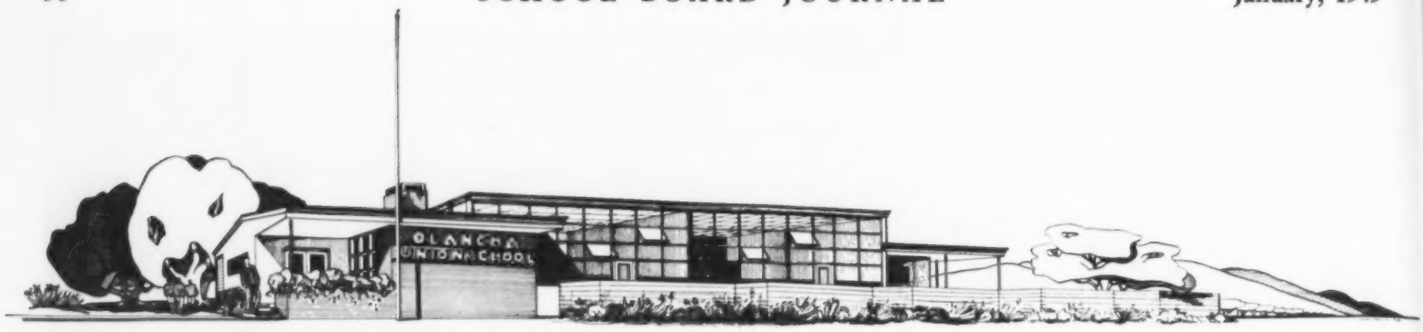
The libraries surveyed were housed with varying degrees of adequacy, ranging from cluttered, closetlike rooms to spacious and well-appointed suites. The combination library-study hall was found in nine centralized buildings and three noncentralized buildings; separate library rooms were in two centralized and three noncentralized buildings. One noncentralized building had a unique combination room used as a library, typing room, teachers' rest room, and principal's office. Three centralized schools had an elementary library room in addition to the high school library. Auxiliary library workrooms were found in 10 centralized and three noncentralized buildings.

The combination library-study hall seemed to be the most satisfactory arrangement for promoting the use of library materials, although the separate library room adjacent to the study hall and connected by a door proved satisfactory in the larger schools.

In the centralized schools, the cafeteria suite was an integral part of the building, generally well planned and equipped, but the school lunch program had grown so rapidly that facilities which had been in use but a few years were inadequate. In the noncentralized areas, three schools had cafeteria suites as integral parts of the building. Two further schools were using makeshift facilities. One of these used folding shelves fastened against a basement corridor wall for tables and folding chairs set up daily. The other used a classroom. The two noncentralized schools without lunch programs had neither temporary nor permanent facilities.

Cafeteria suites often lacked storage space sufficient to permit the economy of quantity purchasing, adequate refrigeration, suitable dishwashing facilities, abundant hot water supplies, and convenient facilities for making deliveries. One second floor cafeteria had no elevator; all supplies were up regular stairways.

(Concluded on page 78)



William Glenn Balch, Architect, Los Angeles, California.

A California Rural School —

The Olancha Union Elementary School

Gene Gach[1]

Near completion of the Olancha Union elementary school in Inyo County, Calif., serves as a classic example of how modern architecture overcomes the handicaps of extremely low financing and geographic disadvantages.

Inyo County's land tax revenues are low because over 60 per cent of it is owned by the Federal Government and is therefore non-taxable. Another large portion is operated by Los Angeles for its water supply under a no-tax agreement.

The geographic headache handed the firm of Wm. Glenn Balch, architect, and Louis L. Bryan who completed the assignment with Architect C. A. Balch, came in the nature of extremely low winter temperature plus high desert winds that machine-gun sand across the area.

Financing came with a $55,000 bond issue from the school district, plus $11,965.24 provided by the state under the provisions of 1947's statute No. 1575, which was enacted to help schools in impoverished districts.

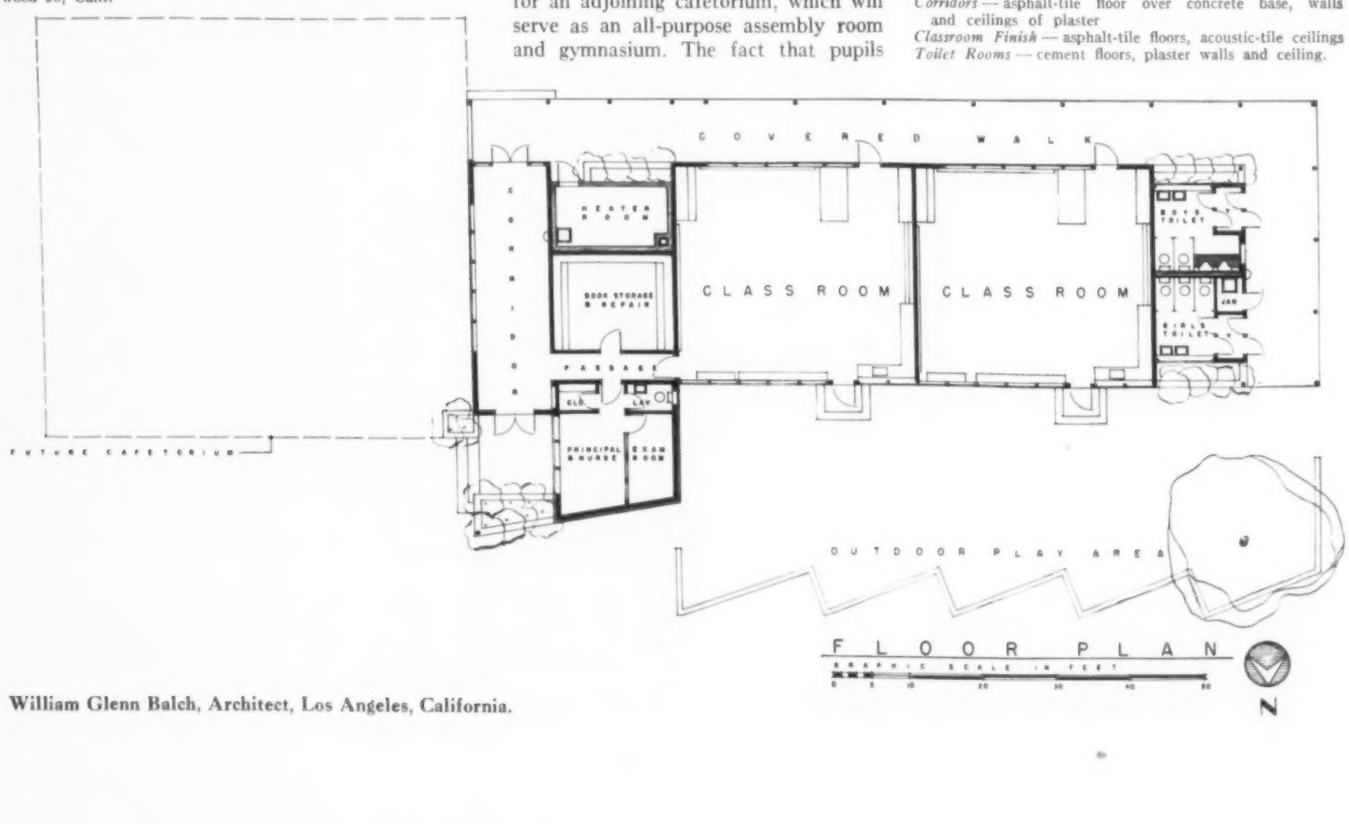
The architects designed a high serpentine wall around the play area to protect the children from the desert winds during play periods. The actual cost of the building will total $61,845. When more funds are available the school board will take advantage of the plans for an adjoining cafetorium, which will serve as an all-purpose assembly room and gymnasium. The fact that pupils travel long distances to this desert school will make the cafetorium a distinct asset.

Wm. Glenn Balch, architect, and Louis L. Bryan, are specialists in school buildings and annually account for some of California's most original and practical school architecture.

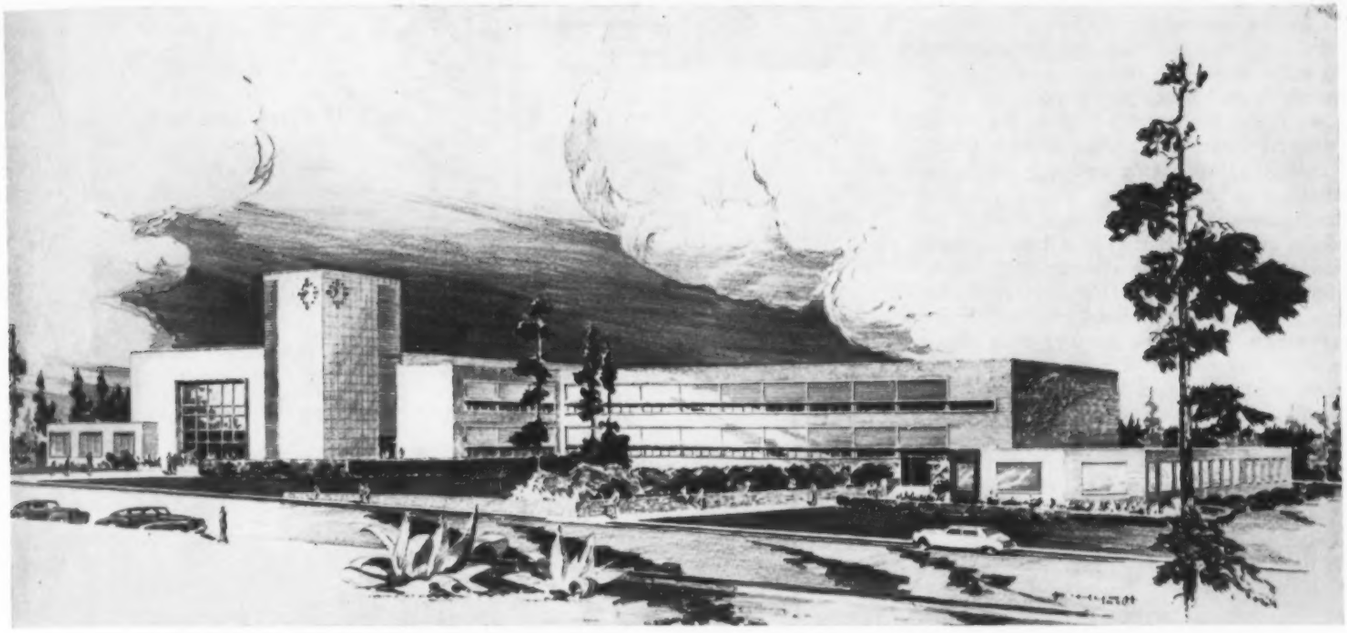
[1]Director, California Architectural News Service, Hollywood 28, Calif.

Architectural Details — Olancha Union School, Inyo County, California

Building Dimensions — 38 ft. by 113 ft. and 18 ft. by 27 ft.
School Organization — Grades one to eight, inclusive
Total Pupil Capacity — 70 children
Construction — wood frame and plaster, on concrete slab floor
Exterior Walls — faced with stucco, wood trim, some brick finish
Corridors — asphalt-tile floor over concrete base, walls and ceilings of plaster
Classroom Finish — asphalt-tile floors, acoustic-tile ceilings
Toilet Rooms — cement floors, plaster walls and ceiling.



William Glenn Balch, Architect, Los Angeles, California.



Perspective, Carthage Junior-Senior High School, Carthage, Texas. — Preston M. Geren, Architect and Engineer, Fort Worth, Texas.

Careful Planning Pays

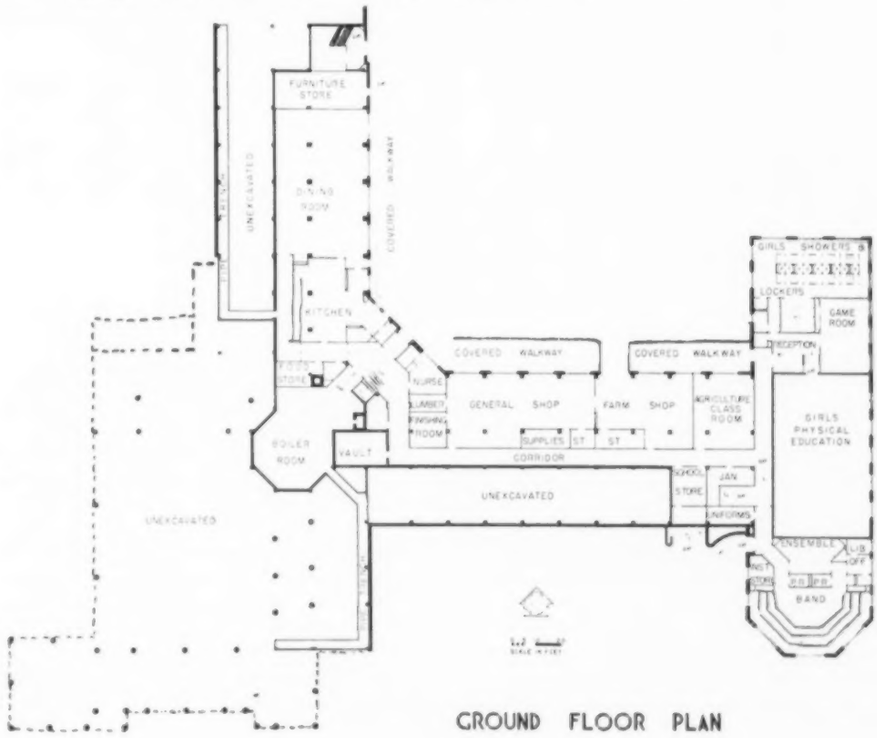
The Junior-Senior High School, Carthage, Texas

*Q. M. Martin**

Twelve small East Texas school districts during 1946 and 1947 consolidated to form the new Carthage Independent School District, serving 2200 scholastics, 1500 white and 700 colored. Carthage, the only town within the 205 square mile area, had been providing as best it could the high school facilities for not only these 12 districts but also for some twenty-odd others, most of which were operating only one and two teacher elementary schools. Tuition collections were the principal source of funds for the high school teaching costs, but taxable limitations prevented the building of an adequate high school building.

Permanent buildings within the district were three: a small high school building for white, another for colored, and a sadly overcrowded elementary school. So this newly created district had its work cut out; i.e., to build a complete plant for all grades, both white and colored. Upon consolidation, the one and two teacher buildings were sold or given to serve as rural churches. Then 24 emergency, prefabricated classroom units were set up biding the time when building conditions could make building possible.

As a starter, a proposal to issue bonds in the amount of $1,100,000 running for 15 years, was voted favorably, and the bonds were sold at an interest rate of 2½ per cent to provide funds for a modern, adequate junior-senior high school building. The taxable wealth back of the issue is largely oil and natural gas holdings, this district encompassing one of Texas' huge gas fields; the field, incidentally, which is the source of most of the natural gas flowing through the "big inch" pipe line to the Eastern States.



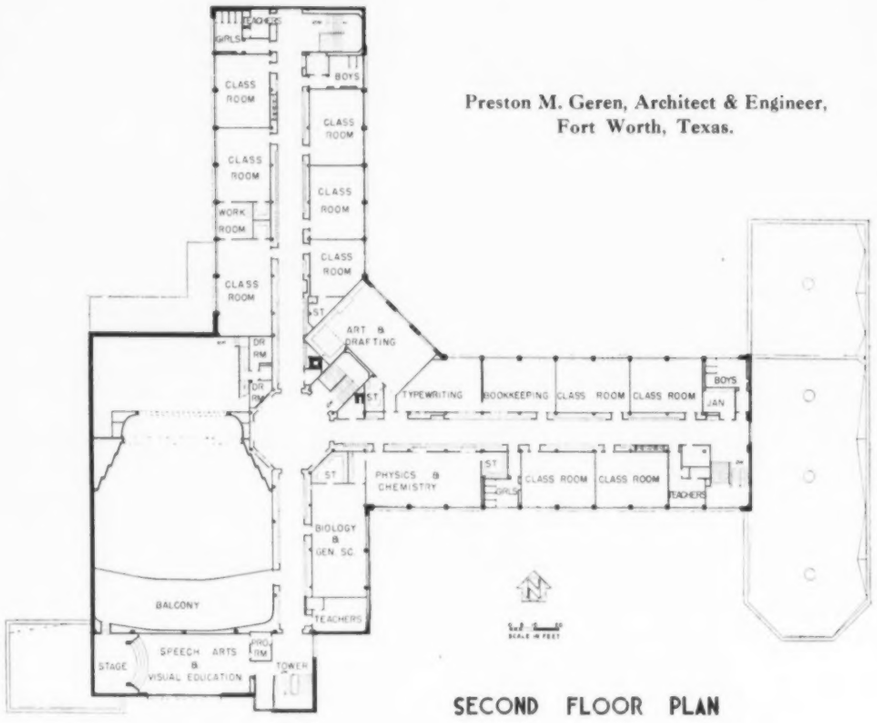
GROUND FLOOR PLAN

*Superintendent of Schools, Carthage, Tex.

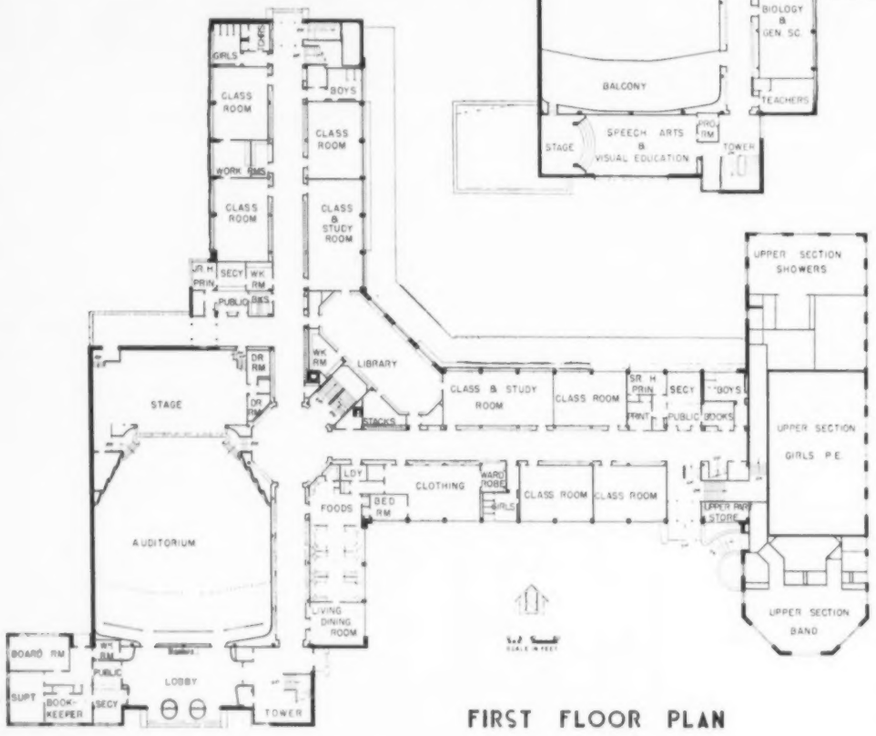
The site selected for the new campus contains 17 acres, a plot of rolling land, at a high elevation within the city limits of Carthage, for which the district paid $17,000.

Organized on the 6-3-3 plan, the school system now enrolls 700 white pupils in grades 7 through 12, but steady growth in enrollment emerging as a consequence of the gas field development is a surety; so, following the advice of the tax counsel of a large corporation operating in the district, which goes, "Build a building, yes; but build it big enough," the school board instructed the superintendent to plan for 200 more pupils than are now enrolled. Long before the bonds were voted, the school superintendent, Q. M. Martin, and the school's architect, Preston Geren of Fort Worth, had set about planning. Even minimum needs at a time of inflation made planning a matter of weighing need against cost for every unit set down. From the time of voting the bonds in 1947 to the lettering of the contract in September, 1948, construction costs continued to rise, so much so that at the opening of bids the school board had its fingers crossed. But the low bidders, Campbell and Kay Construction Company of Tyler with associate bidders, came through with a total bid of $996,000. The contract was let. It is typical of the times to find the difference between the low and high bid on this job a sum of $300,000, sufficient money to build such a building back in the '30's.

Preston M. Geren, Architect & Engineer, Fort Worth, Texas.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

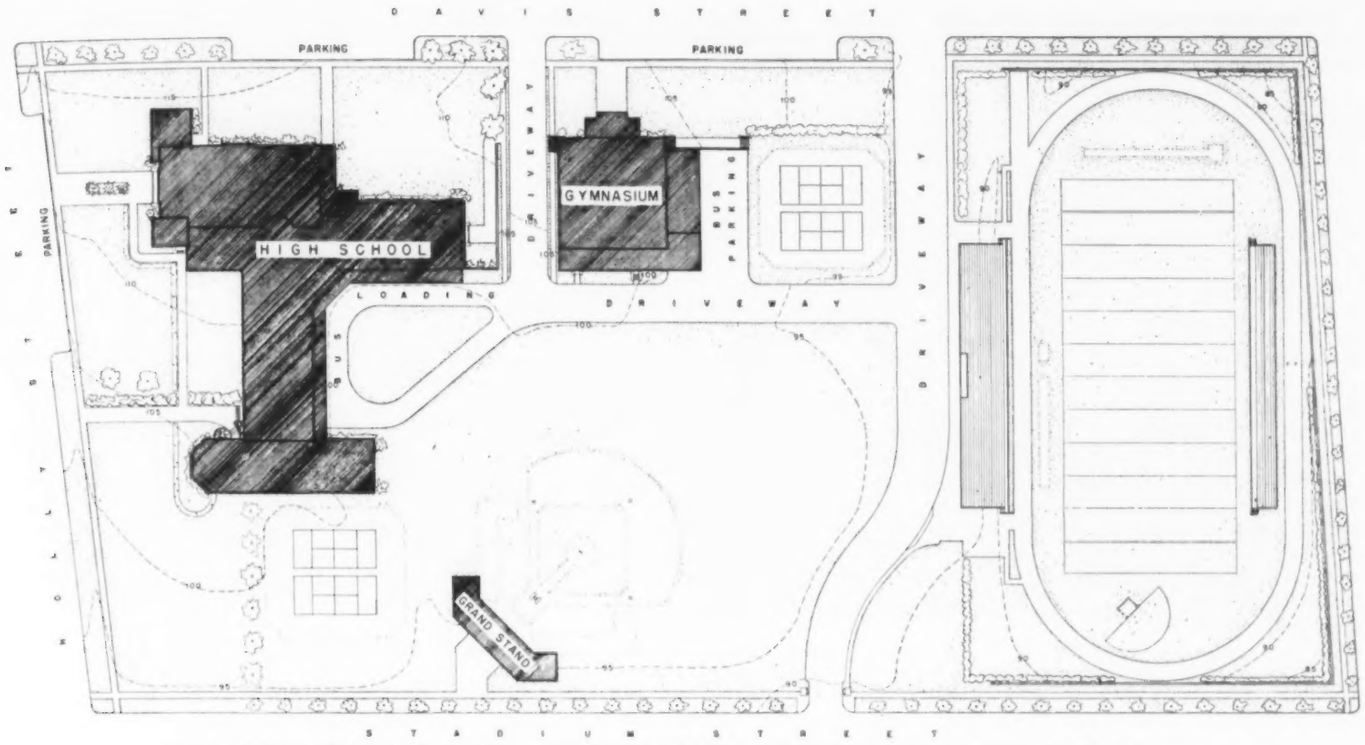
During the days of planning, the school board sent its superintendent to a series of school plant conferences sponsored by the University of Texas and other agencies. At the 1948 convention of the American Association of School Administrators in Atlantic City he got the benefit of recent thinking from men like N. L. Engelhardt, and he picked up many ideas from the display of school building plans which was so vitally a part of the 1948 convention program.

He came away from these meetings with an evaluation of the worth of newer trends in schoolhouse construction, crystallized them in his own plans. For instance, he came away convinced that the trend toward better lighting through the use of prismatic glass blocks, and by a combination of incandescent and fluorescent lighting is sound. So the building makes generous use of the glass block in all rooms except the library, shops, administrative offices, dining room, and kitchen. The prismatic glass block directs sunlight uniformly across the room to a highly reflective ceiling, and from the ceiling the light is deflected to the desk tops below, giving better illumination to the pupils next to the inside wall. Where activities require close work, such as in the typing room, shops, and drafting room, fluorescent fixtures are specified; elsewhere, incandescent. A soft, adequate, nonglare light is obtained in classrooms by increasing the number of hooded incandescent lamps with lower wattage per lamp.

He gained further assistance in planning at the Atlantic City convention through talking with members of New York City's planning staff. He learned of that city's experience with various types of floor coverings for varying room functions. Prefacing the details of the floors, however, it should be said here that the entire structure is of fire resistive materials; hence, the floors are basically a concrete slab. The corridors of the ground floor are of colored, smooth-troweled cement with ceramic tile border; those of the first floor, terrazzo; and the second floor has asphalt tile on concrete. Floors of classrooms and administrative offices have oak blocks laid in mastic, checkerboard fashion. Linoleum for sound deadening covers the floor in the library and in the band room; whereas in the shops we find smooth-troweled cement again. These as well as other specifications were tempered by the practical counsel of the architect before they became a part of the finished plan.

It should be added here that both the architect and the superintendent found the files of the SCHOOL BOARD JOURNAL with their many, many school building plans most helpful.

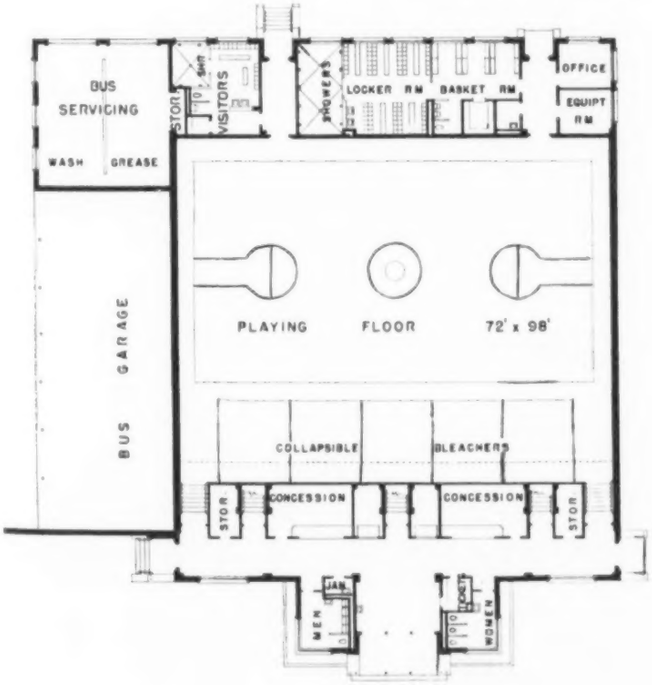
One wing of the building is designed for the senior high school; the other for the junior

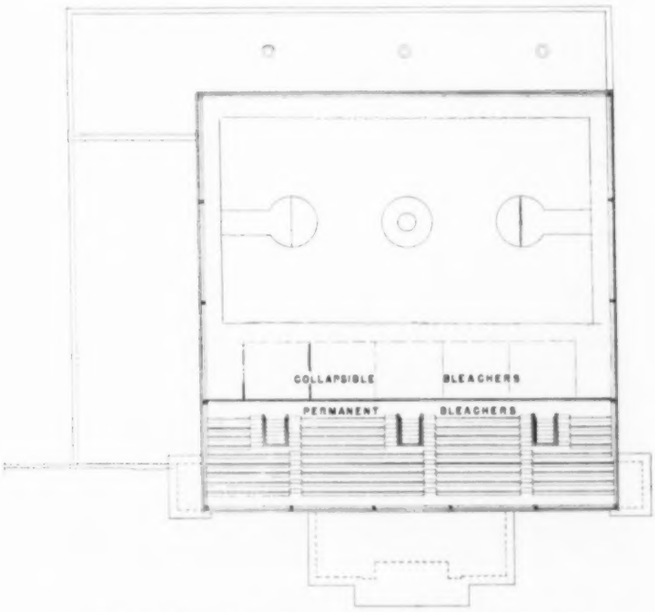


The Carthage High School provides a complete educational and community recreational center for the city.

high, with rooms common to both schools; namely, the library, the auditorium, the laboratories, the art room, and the homemaking department located centrally, joining the two wings.

Special consideration of certain local requirements had to be given. Most of the pupils of the school reside on farms or ranches; barely a third live in the town where the building is located. In fact, many of the pupils ride buses as far as 30 miles to school, 60 miles each day. Attention, therefore, to the business of convenient, safe transportation is of salient concern. At certain seasons in East Texas, it rains a lot and this condition prompted the planning of a covered walkway, a veranda, as it were, to run the full length of the building at the rear, alongside the curb of which the school's 20 buses are parked, so that pupils may be unloaded and loaded without getting wet. This feature is one which has most favorably impressed the community. As an adjunct to the transportation system a bus garage and service unit have been planned, adjoining the boys' gymnasium, providing a shelter to buses, a repair, grease, and wash station, and petroleum pumps.





Left: Main Floor Plan. Above: Bleacher Plan, Gymnasium, Carthage, Texas, High School.

As there is no community auditorium in the district other than the school auditorium, it had to be large. It seats 1200, has an ample stage, 66 ft. wide and 38 ft. deep, with a proscenium opening 38 ft. Four dressing rooms, special lighting with beam lights recessed in the balcony rail, circuit dimmers on the three rows of border lights and disappearing footlights fit the stage for productions of any kind. A "standee" rail at the rear of the main floor, and an access to the rear of the stage from the corridor are two satisfying features. Pupils can enter the auditorium with a minimum of corridor congestion when a general assembly is held.

The visual aids and speech arts room is to be furnished with auditorium-type seating to accommodate 160, and has a stage adequate for small theatricals and music recitals. Terraces leading to the stage level serve both as steps and as landings on which choral groups may stand. This room will also serve as a meeting place for assemblies like the PTA meetings. Since this one room is inadequate for all demands on film and slide projection, classrooms too are fitted with darkening curtains.

At the outset of planning the building, a large gymnasium was to be a part of the building proper, the floor of which would have been divided by a power driven partition, making a section for the boys and one for the girls. It was later decided to omit this large gymnasium and substitute a minimum covered area for girls' physical education, providing a fairly large room for active games and a smaller one for those less active. A separate, exhibition gymnasium to seat 1000 spectators will be built for the boys' physical education program. Then, since Texas weather permits six months of outdoor play during each school term of nine months, and because the outdoors, after all, is the more healthful, there will be added surfaced, open-area courts for volleyball, tennis, and even basketball, adjacent to the girls' gymnasium, making the smaller, indoor areas feasible.

Built to accommodate 90 members at a sitting, the band room is carefully planned to facilitate corridor access and yet avoid the possibility of disturbing other school activities while the band rehearses. Furthermore, since this unit often must be opened at night and on nonschool days, it has been designed so that it may be shut off of the remainder of the building. The uniform storage room is cedar-lined, and all the rooms for music are acoustically treated.

To the cafeteria serving counter access has been arranged so that lines may form in the corridors. Exit is made to the covered walkway at a door placed conveniently adjacent to the dishwashing counter where empty trays may be left. The kitchen service entrance permits trucks to come to the very doorway.

The principal architectural feature of the building is a modern clock tower, faced with stone, rising 57 feet at the front main entrance to the auditorium. This tower is a stairwell to the second floor, and it has space for refrigeration units yet to be installed. This massive tower with the near-by, imposing entrance way of aluminum and plate glass lend character to the entire structure. Furthermore, the stone planting beds pleasingly placed at strategic spots, integral with the walls; and the aluminum rail-protected fishponds sunk in the decorated terrazzo floor of the auditorium lobby add those niceties which school buildings should have to keep them out of the humdrum class.

Miscellaneous features might be mentioned. Chalkboards are light green on an asbestos and cement backing, but chalkboard surface has been cut to a minimum, giving this space to corkboard. Around the walls of the central rotunda of both the first and second floors are three large museum cases built into the wall for displaying student work and project material. Separate office suites for convenient and efficient administration are set up for the junior high school, the senior high school, and the superintendent. All of the corridor clocks as well as the tower clock are synchronized with the master clock. The living room of the homemaking department has been placed just off the lobby of the auditorium and near a main entrance so that it can conveniently serve as a parent's room or lounge at evening auditorium functions. Shelving in the library is a combination of open stacks and closed stacks. The windows of the art room are so designed as to allow the full benefit of a north exposure. No windows are in the auditorium, and ventilation is fan operated, thermostatically controlled. So no problem of darkening this large room for day time film showings is posed, as it is only a matter of turning off the lights. Projection is from the balcony rail so as to give a shorter throw and permit satisfactory images for large audiences even from a standard, portable 16mm. projector. The speaker for film projection is permanently installed at the stage.

Though the junior-senior high school building is the basic unit of the plot plan for the 17-acre campus, a full school program demands other facilities. The football stadium and sports area with its quarter mile running track, completed in 1948, at a cost of $160,000, and the baseball field and gymnasium to be built in 1949, complete the full high school building program. The stadium is a beautiful structure of concrete, steel, light buff brick, and glass blocks, with classrooms, dressing rooms, and concessions beneath the stands.

The Martin Stadium, Carthage High School, Carthage, Texas. This complete stadium structure provides shower rooms for the home and visiting teams with 100 lockers, space for the sale of lunches and soft drinks, restrooms for men and women, storage space for equipment, and a classroom for physical education. The press box is treated with acoustic materials and includes separate rooms for the newspapermen, the public address announcer, and the radio broadcasters.

Much of the success of the comprehensive school plant program at Carthage, Texas, is due to the interest and the solid influence of the board of education. Left to right: Sid B. Turner; T. L. Vincent; R. G. Brown, vice-president; Q. M. Martin, superintendent; Dr. P. B. Koonce, president; T. W. Bingham; P. H. Holmes; J. C. McMichael, secretary.

The decks are of concrete, the seats of California red wood, 17 rows of them, running from the 10-yard line to the 10 of the football field. The outfield of the baseball area will become the afternoon practice field for football and the parking ground for the stadium at game time.

Details of building costs, in these times when such costs have priced most school districts out of the building business, are most important to the building program. As one contractor put it at the time of opening bids, "What this country needs is a good school building for 40 cents a cubic foot." The building is costing 64 cents a cubic foot, including all contracts and the architect's fee, with distribution going as follows: general construction, $789,947; heating and plumbing, $157,695; lighting and electrical, $48,965. Equipment is estimated to cost, with the use of much of the furniture from present class rooms, somewhere near $50,000. Specific details of the building follow:

1. *Exterior Design:* Contemporary.
2. *Exterior Facing and Trim:* Light buff brick, cast stone and metal.
3. *Construction Material:* Classroom wings are framed with concrete columns, beams, joists, floor and roof. Auditorium is framed with steel columns, trusses, joists, and insulated steel roof deck.
4. *Corridor and Stair Finish:* Stairs and first floor corridors have terrazzo floors, glazed facing tile wainscots, plaster walls, and acoustical tile on plaster ceilings. Basement and second floor corridors have colored cement floors with ceramic tile borders, glazed facing tile wainscots, plaster walls, and acoustical tile on plaster ceiling.
5. *Classroom Finish:* Hardwood block floors, plaster walls, and acoustical tile ceilings.
6. *Auditorium Finish:* Concrete and asphalt tile floors, acoustical plaster walls and ceiling.
7. *Girls' Physical Education:* Hardwood strip floors, smooth brick walls, and plaster ceiling.
8. *Toilet Rooms Finish:* Ceramic tile floors; glazed facing tile wainscots, and smooth plaster walls and ceiling.
9. *Type of Heating:* Steam convectors in classrooms, and steam heated hot air systems for the auditorium, administration wing, speech arts room, and band room.
10. *Type of Ventilation:* All corridor ceilings are suspended forming a plenum space connected to 7 two-speed fans on the roof. Fresh air is drawn from the windows across each classroom through registers into the corridor plenum and exhausted over the roof.
11. *Temperature Equipment:* Individual room thermostats operated by compressed air, control temperature in each room.
12. *Electrical Equipment:* Classrooms for close work have fluorescent lights, other rooms have incandescent fixtures. Auditorium stage has complete theater stage lighting equipment.
13. *Plumbing and Sanitary Equipment:* Standard vitreous china fixtures; copper and wrought iron water pipes, cast iron waste pipes with "Duriron" waste lines from laboratories.
14. *Fenestration:* All classrooms have shaded steel sash with clear glass below eye level and panels of prismatic glass blocks above eye level.
15. *Cubage:* 1,645,680 cu. ft. in building.
16. *Total Floor Area:* 91,128 sq. ft.

It should be said in conclusion that as a counterpart of the program just described the school board has its architect at work on the plans for a quarter of a million dollar building for the fewer colored pupils of the district, the building to be constructed next year.

STATE SCHOOL AID IN NEW YORK

Governor Thomas E. Dewey of New York State, in a statement issued on December 2, declared that state aid for public schools during the fiscal year 1949–50 would reach $194,300,000, or $40,200,000 more than during the 1948–49 year. The increases to be sought for 1949–50 would not involve any rise for teachers' salaries beyond the schedule provided for in the Feinburg law in 1947–48 and no increase in the present rate of state aid per pupil.

Mr. Dewey compared the 1948 appropriations with what he said he expected to seek from the next legislature for 1948–50 operation. He said aid to common schools would climb from $147,400,000 to $188,000,000.

Added to that would be a $2,800,000 expenditure for the school lunch program, $500,000 for the physically handicapped, and $3,000,000 for teacher training. This brings the 1949–50 figure to $194,300,000. Mr. Dewey said that the legislature would be asked to provide this huge amount, which may even rise to $196,000,000.

The C.I.O. Teachers' Union of New York City has called Governor Dewey's prediction of a $40,000,000 increase in state aid inadequate for education within the state.

SCHOOL ORGANIZATION IN OHIO

The city school systems of Lakewood, Cincinnati, Dayton, Columbus, Youngstown, and Springfield, Ohio, have unit control of the schools, with the superintendent as the chief executive. The school systems at Cleveland, East Cleveland, Toledo, and Warren have a three-headed system of control, in which the superintendent shares authority with two school business executives.

TENTATIVE PROGRAMS FOR AASA REGIONAL CONFERENCES

Belmont Farley of the National Education Association, Washington, has announced the tentative programs for the St. Louis, San Francisco, and Philadelphia Regional conferences, to be held during the week of February 20 to 23. The theme for all three conferences is "Education and the General Welfare."

CHICAGO SCHOOLS ASK STATE AID RISE

Greater state aid to the amount of at least 20 million dollars a year, and legislative authority to spend any or all of additional aid received this year has been sought by Supt. Herold C. Hunt.

The New Blackberry Lane Elementary School, University City, Missouri

Dr. Julius E. Warren
Superintendent of University City Schools

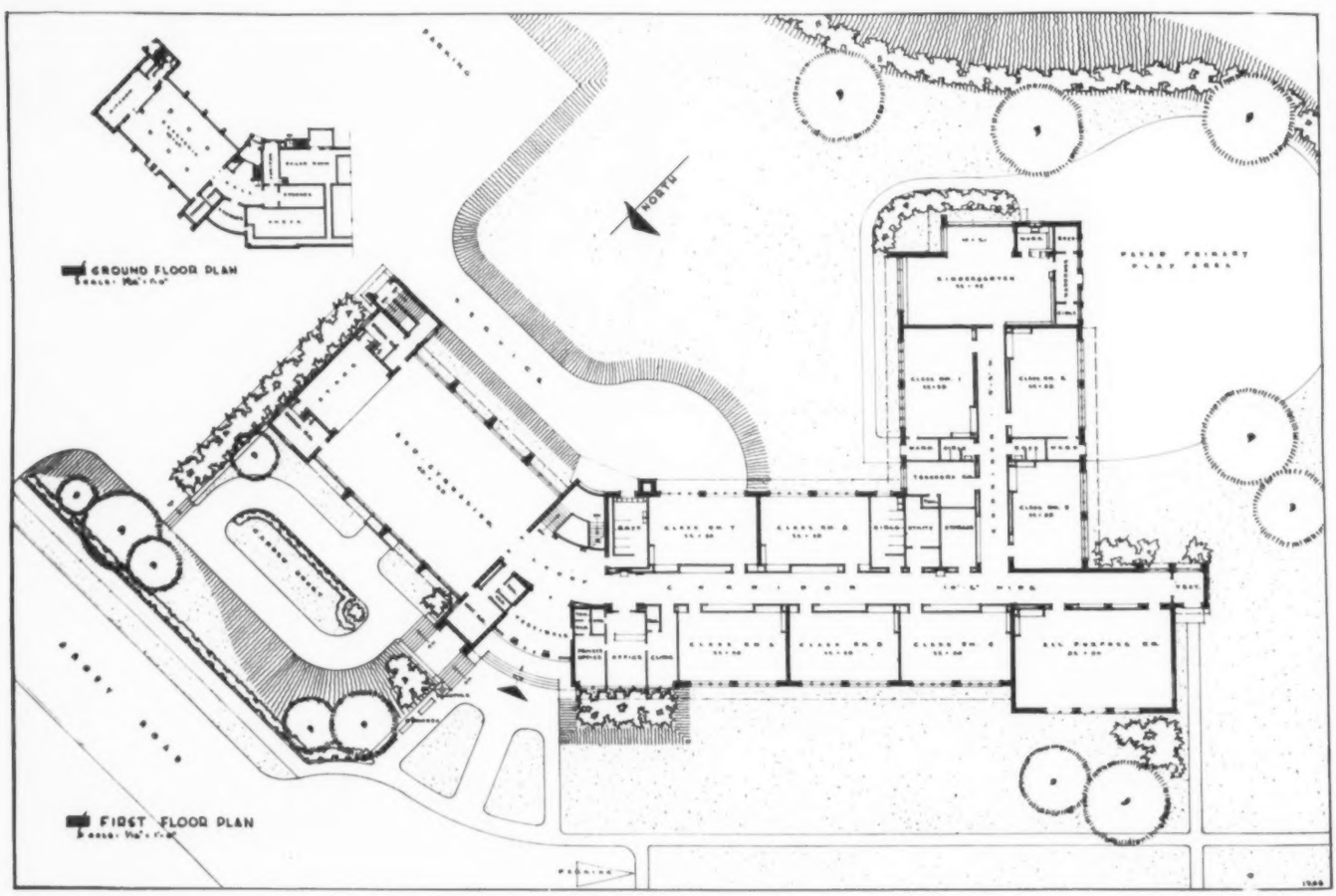
Wm. B. Ittner, Inc.
Architects-Engineers, St. Louis, Missouri

The New Blackberry Lane Elementary School under construction for the School District of University City, a residential-area immediately west of and adjacent to the city of St. Louis, is located on a seven-acre site. The property has a frontage of 508 feet and an extreme depth of 790 feet.

The interesting and unusual design of the building is due, in a large measure, to the commanding site condition with its ample parking space, playground facilities, and landscaping. Its architectural distinction, thoroughly modern in character, is due to the natural evolution of a varied and well-ordered educational plan.

The building, mostly one story, is a fire-resistive structure with concrete foundations, floors, stairs, etc. The exterior walls are hard, red, shale brick with exposed concrete projecting roofs. Some of the special features are the use of glass blocks in the typical classrooms, the location of the kindergarten wing for use by the primary grades, and the corridors provided with natural light by means of glass blocks in monitors. The location of the cafeteria-kitchen, etc., under the auditorium-gymnasium wing, takes advantage of the natural contour of the ground. The main entrance, at the intersection, occupies a commanding position with ready access to the auditorium-gymnasium and the administration group. The administration group is composed of a general office, a principal's room, and a clinic.

The typical classrooms, each 22 by 35 feet in size and arranged to accommodate 35 pupils, are provided with blackboards, tack panels, and a work alcove, with a work shelf, a sink, and storage cases. The windows are directional glass block, with steel ventilating sash at sill height. The projecting roof forms a shade, and the sloping ceiling directs light to the back of the room. Lockerobes are recessed in the corridors adjoining each classroom door. The floors are covered with asphalt tile in



Plot Plan and Floor Plans, Blackberry Lane Elementary School, University City, Missouri. — William B. Ittner, Inc., Architects and Engineers, St. Louis, Missouri.

Architect's Perspective of the Blackberry Lane Elementary School, University City, Missouri, looking toward the auditorium-gymnasium wing and showing the sunken garden. — William B. Ittner, Inc., Architects and Engineers, St. Louis Missouri.

varied color and the ceilings with acoustical material.

The kindergarten, 22 by 49 feet, is a pleasing room with its large bay window facing the south. It is provided with a project room, toilet facilities, and wardrobes. It gives direct access to the playground.

The primary classrooms, each 22 by 35 feet, are provided with a work alcove and wardrobe with access to playground. The toilets for boys and girls are conveniently located.

A teachers' room and a storeroom comprise the wing.

The "all-purpose room," 32 by 50 feet, is located at the intersection with the future expansion wing.

The auditorium-gymnasium, 45 by 65 feet, with stage and dressing rooms, has a maple floor and "Lamella" type arched roof, with insulation panels in ceiling. The folding chairs are stored on chair trucks under the stage when not in use.

The cafeteria, 45 by 65 feet, a well-appointed kitchen, storeroom, etc., and the boiler room occupy the ground floor. The cafeteria, with good natural light and ventilation, has a seating capacity of 200 pupils.

The corridors have wainscots of ceramic tile, floors of terrazzo, and ceilings of acoustical tile. The toilets also have wainscots of ceramic faced tile and floors of terrazzo.

The heating and ventilating system is of modern type, with low pressure steam and vacuum returns. Classrooms are equipped with unit ventilators, and the temperature is maintained uniformly by thermostats. In addition, the kindergarten wing is provided with underfloor heating, controlled by thermostat. Exhaust ventilation is arranged for the kitchen, toilets, etc.

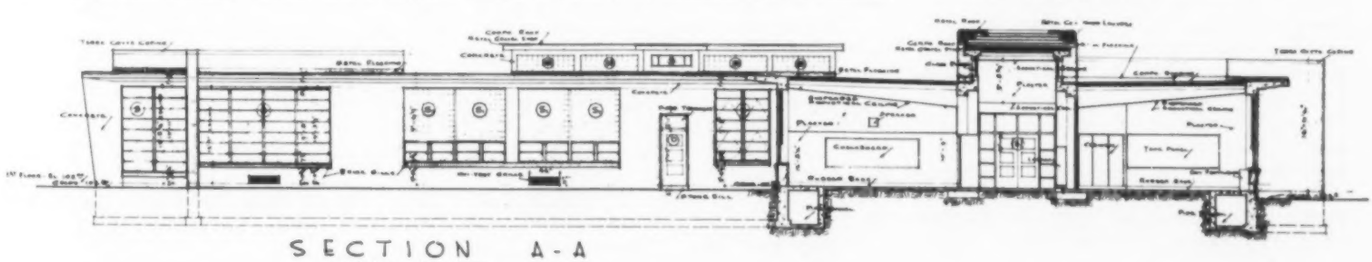
The plumbing is standard cast iron and steel piping, and the fixtures are of modern and sanitary type.

The electric wiring is in conduit, as approved by the National Board of Fire Underwriters.

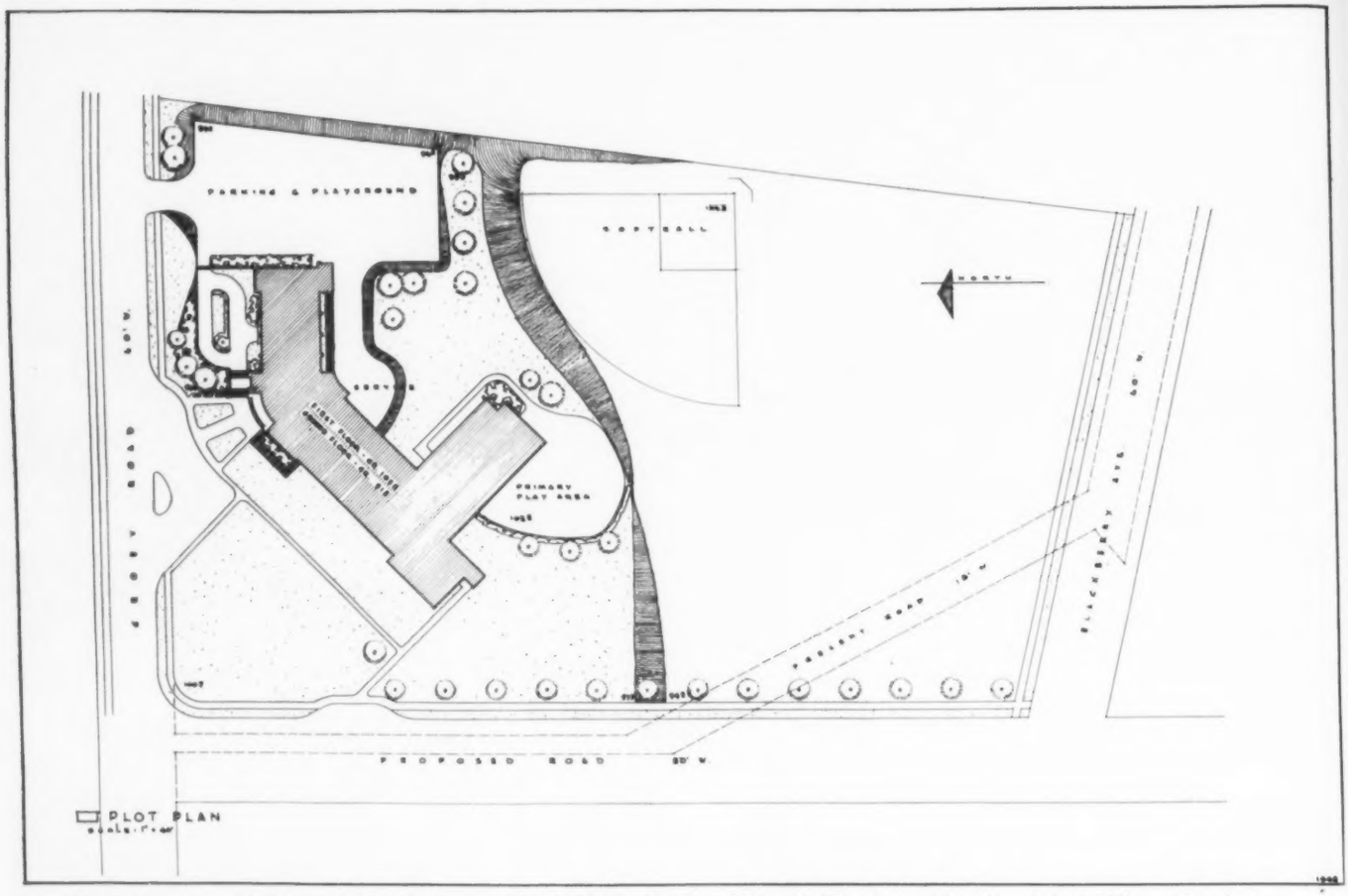
A clock system, a radio system, a public address with talk-back, and semi-indirect lighting fixtures will be provided.

School Capacity

1—Kindergarten	40 pupils
8—Classrooms of 35 ..	280 pupils
Total normal capacity	320 pupils
1—Administration	



Sectional Plan of the Blackberry Lane Elementary School showing typical interior, exterior, front and rear walls of classrooms.



Plot Plan of the Blackberry Lane Elementary School, University City, Missouri. The plan and location of the building makes the best possible use of the contour of the site. — William B. Ittner, Inc., Architects, St. Louis, Mo.

1—All-purpose room
1—Auditorium-gymnasium
1—Cafeteria
1—Teachers' room, toilets, etc.

The building will cost $446,577.30, exclusive of equipment.

The educational planning for the building was initiated by Dr. Julius E. Warren, superintendent.

The architectural work and supervision is being done by Wm. B. Ittner, Inc., Architects and Engineers, St. Louis, Mo.

Elementary School Planned for Community Use

*Alfred R. Young**

As early as 1942 the board of education of District 14, Lamar, Colo., located in the rich Arkansas Valley, authorized a complete study of the local school buildings to determine a sound future policy in the light of a growing community, a marked increase in the birth rate, and the lack of building replacements during the depression years. This survey was completed in the spring of 1943 and several sites were located, purchased, and improved. Within a short time the board of education outlined a ten-year building program which called for the erection of several units as they were needed.

A mechanical failure of a furnace at one of the elementary schools, scheduled for replacement, caused serious damage to the structure. Although the damaged building was repaired for temporary use, immediate plans were formulated to replace this structure at the earliest possible date.

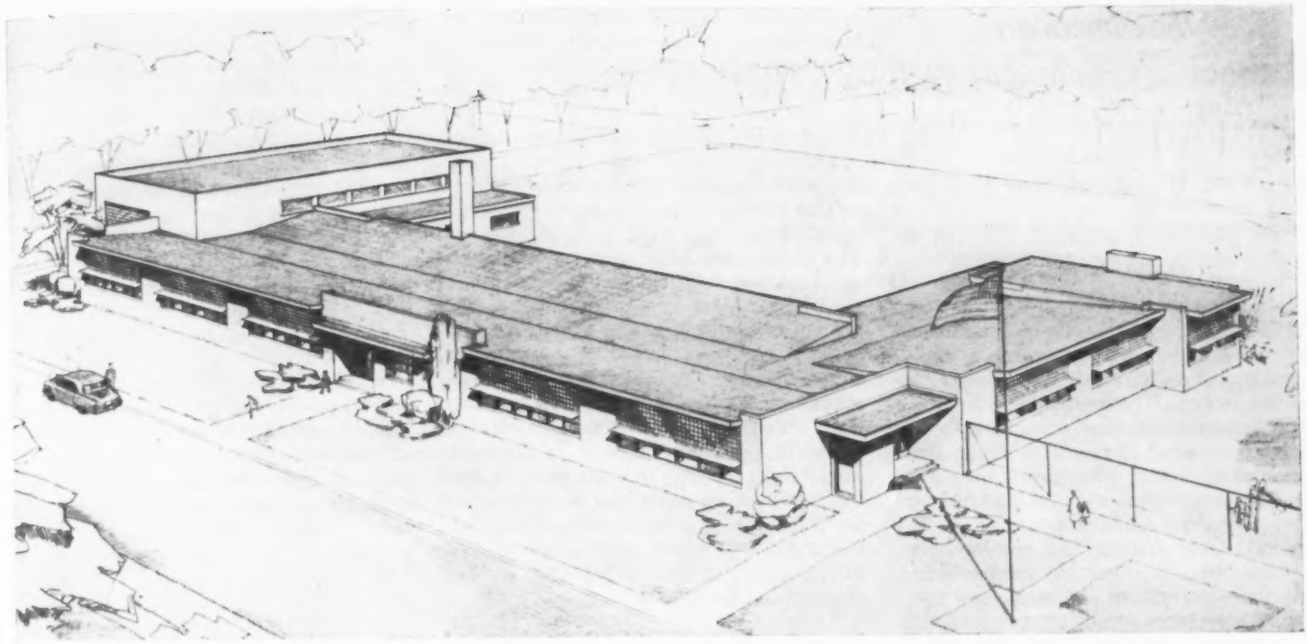
Henry A. Koch, architect, of Denver, Colo., was engaged to submit preliminary sketches of a structure based upon the present and future needs in this area. Details for submitting a bond proposal to the patrons were completed and a serious study by the P.T.A. organizations, patrons, faculty, and board of education was begun on every phase of the building program. A favorable vote was given to a bond issue of $320,000 in May, 1948, with the P.T.A. assuming full leadership in presenting the needs to the patrons.

The bonds were sold early in July with a variable interest rate ranging between 1½ and 2½ per cent, and an average rate of 2.3088 per cent. The detailed plans for the new building were accepted early in September and the bids were opened October 18, 1948. The general contract was awarded to the Ralph Eaton Construction Company of Lamar, and the heating, plumbing, and ventilation contract to Frank A. Dougherty Plumbing & Heating Company of Lamar. The total of the two bids was $289,997, making an average cost of $14.50 per square foot.

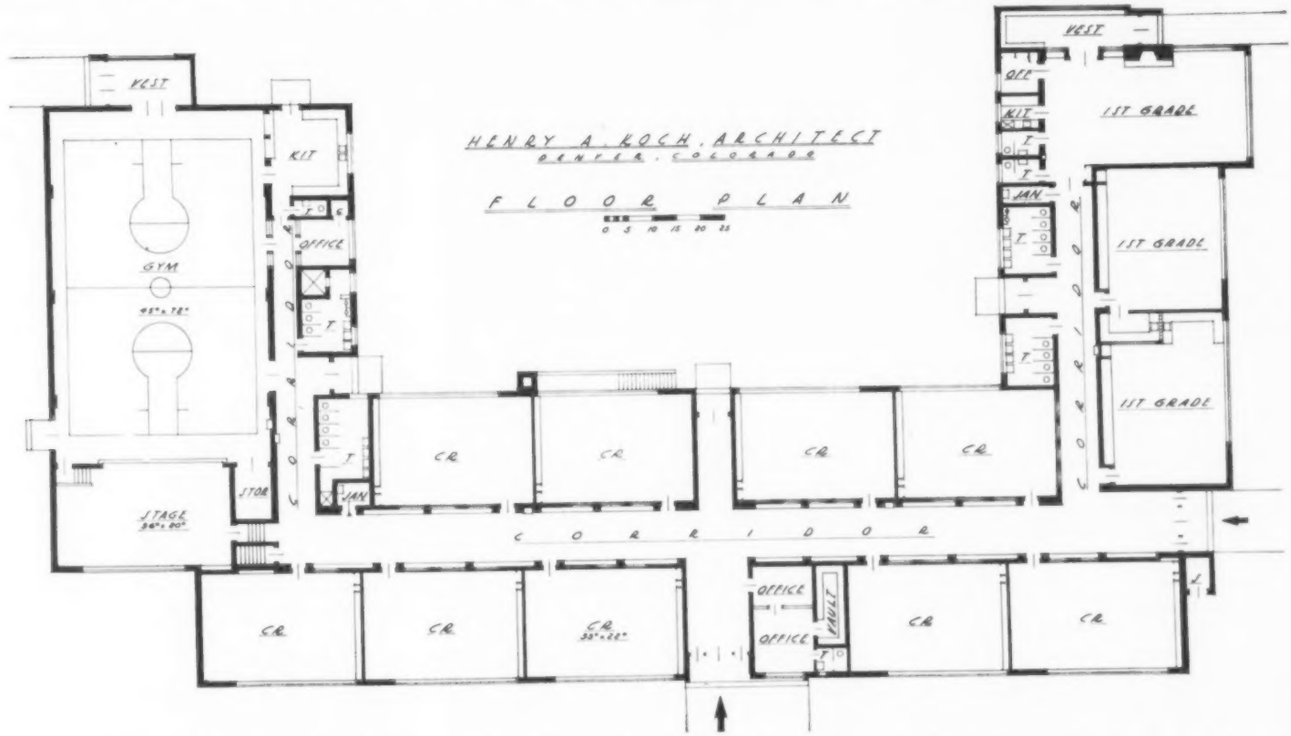
The structure is centrally located on a three-acre tract of land and will consist of 12 classrooms, a gymnasium-auditorium combination room, a large stage designed to be used as a music room, a teachers' lounge, kitchens, offices, and rest rooms. The building as planned will house the first six grades and serve as a community center for the immediate neighborhood.

The specifications call for a one-story structure with masonry walls faced in tapestry brick

*Superintendent of Schools, School District 14, Lamar, Colo.



The Lincoln School, Lamar, Colorado. — Henry A. Koch & Associates, Architects and Engineers, Denver, Colorado.



and protruded aluminum window frames throughout. The walls in the halls and gymnasium will be of light colored glazed brick, and the floors will be of 3/16 asphalt tile over concrete. In the auditorium-gymnasium combination the concrete slab will be covered with maple.

In order to increase the fire resistance of the building and secure a type of roof most suitable to the Lamar climate, concrete over steel framing has been specified. A built-up roof of asbestos followed by a pitch and gravel topping will complete this important feature of the structure.

Ventilation will be supplied by thermostatically controlled blowers located in an airtight plenum chamber built into the space between the hall ceilings and roof. The roof design of the building made it possible to incorporate this feature at an appreciable saving in the metalwork contract.

Extensive use of directional glass blocks, sloping ceilings, and continuous rows of fluorescent lights will provide ample illumination in the classrooms. The heating will be supplied by a low pressure steam boiler and univents supplemented by radiant heating along the outside walls. Built-in storage spaces, new ideas of decoration, light colored furniture, and extensive application of acoustical tile will add measurably to the effectiveness of each classroom.

The building is scheduled for completion in August, 1949, and will represent a new era in modern school construction in Lamar and eastern Colorado.

The American
School Board Journal
A Monthly Periodical of School Administration
Edited by
Wm. Geo. Bruce and Wm. C. Bruce

SCHOOL BUILDING CONSTRUCTION IN 1949

THERE are signs that the confusion and the material shortages in the school building situation are slowly but certainly righting themselves. The year 1948 was a difficult one because prices continued to rise, contractors were unwilling to make fixed contracts except at protective rates, there were endless delays in obtaining steel and other materials, and the efficiency of construction labor dropped to a new low point. In recent months, there has been evidence that the shortages of industrial and commercial structures are being met, and that while the housing situation is still serious, the upward curve of building demand and costs is flattening out, and the basic troubles with which school boards have been belabored are passing.

The great need for school building construction, reflected in Dr. Essex's summary of the New York State situation and in the current N.E.A. study, suggests that 1949 should be the largest year in schoolhouse construction in the history of the country. During the past year, the planning of school buildings has been stepped up to the point that literally several thousand school boards are ready to place contracts almost immediately for new structures, for additions to existing buildings, and for major remodeling jobs. New York City is again leading all the great communities in a huge program of construction. The building forecast of the U. S. Department of Commerce estimates the cost of educational buildings to be erected in 1949 at 1,025 million dollars.

During the past year the tendency to plan the elementary schoolrooms about 30 feet square and to provide natural light by directional glass block, or by a supplementary clerestory window arrangement, has asserted itself. It would appear that the generous type of classroom will be built more and more frequently in the next decade. The finish of walls, ceilings, and furniture and floors in light, high-reflective colors seems to be as significant for satisfactory seeing conditions as the new radically high requirement of IES for artificial illumination.

In the over-all of planning, much progress has been made toward better use of one-story, open-type of elementary school and smaller high school, with great flexibility for future arrangement of classrooms. It has been noteworthy that no state or federal authority, or voluntary organization, has recommended any distinct changes in the essential construction. The high costs and the wide use of one-story plans has led to the use of less permanent materials, to the elimination of monumental design, and to the greater adaptation of all schools to the physical and aesthetic needs and abilities of children.

The increased interest rates for school bonds, which took place early in 1948 and which were eased slightly as the year went on, have not affected the dependence of school boards on long-term school financing. Most bond elections have been favorable by large majorities. In several states there has not been too wise a demand that the legal bonding limit be raised from 5 to 7 per cent of the assessed valuation. The building troubles of numerous small school districts indicate that the need for well-planned state aid is growing to the point that action must be taken. Federal aid too deserves consideration as an educational necessity rather than a relief or economic balance.

There are four reasons for pushing school building projects to the limit during 1949: (1) The obsolescence of old plants is constantly getting worse from the standpoint of educational service and safety. (2) The shifts and growth in population are certain to continue sharply during the next ten years. (3) The demand for expanding the curriculum, particularly of the elementary school, is growing, and will continue. (4) New services for the use of the school building by adult groups who desire further instruction and recreation are rising. As was advised a year ago in this column, it is seriously wrong to wait until the building materials and labor markets are stabilized before proceeding to provide children with adequate schoolhousing. The planning of the past five years must be put into action — into buildings ready for use.

UNDER BOARD OF EDUCATION DIRECTION

THE tendency to centralize municipal functions and to entrust new activities and services to existing administrative departments and boards deserves the consideration and co-operation of boards of education. In some instances, local situations can be strongly improved by placing under the board of education enterprises which are considered municipal in character and share city enterprises, but which affect particularly cultural interests and the activities of young people.

Such a shift may mean an increase in the scope of the administrative activities of the superintendent, the addition of a full- or part-time assistant, and the employment of a new staff of workers; it may mean, too, added work for the school-business department and its divisions of building maintenance, purchasing, and accounting. It may result in new co-operative relations with other city departments and, perhaps, some attempted political interference in a previously serene and independent school office. As a rule, the city council and the mayor or city manager of municipality are willing to part with activities simply because no other group has the competence or vision to undertake such work as recreation and playgrounds, physical education, library service, public forums, community centers. An even more important reason is the opportunity to have the new services handled with the efficiency and exceptional economy which municipal governments have found in the school departments.

Glenn Holmes, of Madison, Wis., in a discussion of the efficiency and economy advantages of board-of-education control of the local municipal recreation, health, adult-physical-education, and social-center programs in parks and schools, points out three important means of saving city tax moneys. Writing recently in *Municipal Finance* he shows that: (1) The experience and the fine organization of the office of the school business manager makes it possible to organize and to cut the costs of purchasing supplies and equipment, of setting up the budget and accounting, and of handling the pay rolls. The superintendent of school buildings, (2) makes available personnel and equipment for maintaining and repairing the park playgrounds and the school facilities used for recreation and community activities. (3) The board of education makes available at absolutely minimum cost its total facilities for the extensive programs and shares the cost of staff salaries and supervision. The school board finally gives the entire series of enterprises a continuity, a high constructive purpose, and a social dignity which they could not reach through mere city departments.

The practice of the Madison schools in considering the special educational services described as primarily municipal in character has the value of keeping before the community the need of providing special funds rather than taking these out of the regular school tax intended for elementary and high schools.

SOCIAL WELFARE OF SCHOOL PERSONNEL

IT IS an interesting fact that the school systems which are considered genuinely progressive and which enjoy the services of strong school boards and competent business executives seem to have a uniformly high regard for the social welfare of their nonteaching personnel. These attitudes may be the result of the high quality of social understanding in the board membership and of social responsibility in the executive officers. They may also be one of the effects of the elimination of politics from the local school situations.

The social welfare of workers is more

than ever an accepted responsibility of industry and business. Organized labor seems to be as concerned for the social security and the total welfare of the workingmen as it is for wage increases and the unionization of shops. School boards are perhaps legally immune to labor pressures and the threat of strikes, but they cannot overlook the general tendency for the total social betterment of their staffs, especially the nonprofessional groups.

In the conduct of a balanced policy of personnel management, experience has shown the value of school board help in developing such mutual enterprises as credit unions, group insurance, building-and-loan associations, and co-operative hospitalization. An old age retirement plan is a necessary part of any socially acceptable wage or salary schedule.

Experience has shown too that such basic elements of a program as (1) a wage scale equal or better than similar rates in local industry, (2) reasonable working conditions, (3) a nonpolitical method of employing and promoting men, (4) a sound plan of rating for efficiency, and (5) security during satisfactory service — all these are vastly more necessary than the supplementary devices for social welfare enumerated above.

It has always seemed to us that the school board should be a model employer whose policies toward and interest in all the school employees are outstanding in the community. Such a model employer may be expected to take the initiative in bettering the personal situation of each staff member, to welcome the representatives of any group which has independent ideas and improvements to present, and to so manage that all its people are interested in their jobs, proud of the fine condition of the school buildings and grounds, and appreciative of the social value of their work. Such a model employer can readily insist upon efficient service so that the children and teachers may study and work in attractively clean, sanitary, and safe buildings and grounds.

UN-AMERICAN ACTIVITIES

It behooves all teachers, as well as administrators, during these trying times to be ever on their guard on this point. Today as never before, schools as well as all democratic organizations, are passing under the eye of scrutiny. Political, religious, and social oppression are running wild in parts of the world today, and many people do not bother to analyze what they hear because of many fears. What you might say may be interpreted in the light of un-American activities. Use good judgment. — *Raymond H. Koch.*

A school report that is too breezy is in danger of becoming windy.

Word From Washington —

The Schoolhousing Situation—Observations Concerning State and Federal Aid

Elaine Exton

Various studies are now under way to revise estimates of school-building needs in the light of current conditions across the nation. Each new report brings tidings of an increasingly critical situation due to the growing backlog of construction projects, continued local school unit reorganization, new curriculum offerings and teaching methods, expanding enrollments, and higher prices.

Matters have reached such a pass that Dr. Willard E. Givens, executive secretary of the National Education Association, has said: "Schoolhousing shortages during the next few years may greatly impair the efficiency of the nation's schools. . . . Unless the problem is attacked immediately and with all possible vigor, in every community according to its needs, tremendous educational losses will occur."

Salient Facts About Schoolhousing Shortages

A recent investigation by NEA's Research Division based on the 1947–48 situation as reported by 1600 school superintendents in communities above 2500 in population[1] disclosed that the problem of providing satisfactory schoolhousing in city-school systems is "widespread and serious" and brought forth the following facts: At least one school building in every five now in use in the systems co-operating in the study are 50 years old or more — 2 per cent of them are 80 or more years old. Slightly over half of the cities reporting have some schools that are overcrowded. These buildings were accommodating on the average about 30 per cent more pupils than they were constructed to serve. Such overcrowded conditions are especially frequent in elementary schools, and, generally speaking, are more common in the larger cities than in the smaller urban communities.

One city in 10 of those participating in the survey has such limited facilities that at least part of the pupils have only half-day sessions, an arrangement that strikes especially hard in first and second grades, but, in the various school systems, reaches all grades and all levels. In the opinion of the co-operating city-school administrators, half-day sessions are likely to be much more numerous by 1950–51 than they were in 1947–48 — probably will be in operation then in almost twice as many cities as during the past school year.

Portable or other temporary school facilities are in use in 15 per cent of the nation's cities, and rented buildings (stores, churches, community halls, residences, and so on) in nine per cent, while 24 per cent of the cities report that they are continuing to use, on a special-permit basis, at least one obsolete school building which has been officially condemned as unsafe, unsanitary, or otherwise unsuitable for school use.

Four cities out of every five listed one or more urgently needed school-building projects for their respective school systems in addition to any that were under construction or under contract. Two thirds of the cities reported a need for one or more elementary buildings, 40 per cent a need for senior high schools, 22 per cent a need for junior high schools, and 23 per cent a need for schools of combined and special types.

All the new buildings under way could accommodate only about as many pupils as are attending school on half-day sessions. If all were used to eliminate the half-day sessions this would leave unprovided for many instances of overcrowding as well as the problem of mounting enrollments. Since this NEA study does not assess conditions in rural areas its findings understate rather than exaggerate the situation with respect to the nation's schoolhousing needs.

Spiraling School Building Costs

Although the index numbers given below do not apply specifically to school buildings, it is believed that they reflect the fluctuations that have occurred in school construction costs during the period concerned with reasonable accuracy. On a 1913 base of $100, the index of general construction costs for 1947 was $396.09 as compared with $289.95 in 1943, and $307.74 in 1945 — $480.21 in October, 1948, an increase of 55.80 per cent over October, 1947.

Index of General Construction Costs

Year	*Average cost index*
1913	$100.00
1918	189.20
1920	251.28
1929	207.02
1932	156.97
1935	195.22
1939	235.50
1943	289.95
1945	307.74
1946	345.74
1947	396.09

Cost index by recent months	
Oct., 1947	$424.41
Nov., 1947	429.30
Dec., 1947	432.30
Feb., 1948	436.89
Apr., 1948	438.50
June, 1948	455.80
Aug., 1948	475.51
Oct., 1948	480.21

The above tabulation was prepared by Dr. N. E. Viles, the U. S. Office of Education's Specialist for School Plant Management, from the *Engineering News Record*. The indices are based on materials such as steel, clay products, lumber, cement, etc., and labor and are made up for the country as a whole.

[1] *School Housing Needs in City-School Systems, 1947–48*, National Education Association Research Bulletin, December, 1948, 50 cents a single copy.

General over-all construction costs in 1949 will probably average slightly higher than in 1948 in the opinion of Samuel J. Dennis, a member of the Falls Church Virginia School Board and chief of the Economics and Statistics Section of the Construction Division at the U. S. Department of Commerce. Although it seems likely that a reduction in construction costs will take place some time within the next half-dozen years, or so, he thinks that any cost declines that do occur will be much less extensive than in the great depression of the 1930's and says there is no assurance that when school building costs begin to drop they will take off from present price levels rather than from still higher figures.

Mr. Dennis suggests, therefore, that it would be advisable for school officials not to wait for prices to come down but to start urgently needed school-plant projects now and to continue building in an orderly sequence so that if some of this necessary construction is undertaken when prices are high, later work will be going forward when prices decrease and the cost of the total program will average out at an intermediate figure.

Other authorities point out that money is likely to be tighter if and when prices fall and emphasize the importance of financing capital outlay on short term obligations. Some school districts are voting five-year bonds to meet this contingency.

A recent NEA press release reveals that in the decade preceding the depression, the public schools of the nation expended slightly less than $600 per additional student for schoolhouse construction which under present pricing would come to about $1,400 per additional student. According to this source, an expenditure at this rate for the increase in enrollment of more than seven million additional students expected by 1955, would require a total expenditure for new public school buildings amounting to approximately ten billion dollars in the next seven years.

State Aid for School Buildings

The United States Office of Education reports that thousands of localities cannot provide urgently needed school facilities from local tax resources and bonding capacities and that state financial assistance will be necessary. Moreover, information received by this agency indicates there are several entire states that will not be able to provide their minimum school-plant needs without federal aid.

Most states have been slow to accept responsibility for sharing the cost of erecting satisfactory physical facilities for education, according to Dr. Ray L. Hamon, chief of the School Housing Section of the U. S. Office of Education, who reminds that only 19 states now furnish some financial assistance to local school districts for capital outlay and that of these only 10 have state-aid programs that are significant in terms of the amount of money made available. He cites Washington as an outstanding example of a state with superior arrangements of this kind and North Carolina as one of several states contemplating progressive legislation in this field.

In view of the fact that most state legislatures will be in session early this spring, Dr. Hamon maintains that it is of paramount importance that the issue of state aid for school buildings be thoroughly explored. He urges state school officers to prepare plans for this purpose to submit to state legislatures and to set up machinery for administering state-wide school-building programs. In his opinion local school officials would do well to complete their reorganization activities and make careful surveys of educational plant needs in terms of location, type, size, and priority so that they will be ready to participate in any state and federal programs of financing that may develop.

School Construction Legislation in the 81st Congress

At the national level both governmental and nongovernmental agencies are busily engaged in drafting school construction bills that vary

widely in amount, formula for distributing funds, and administrative arrangements. Any proposed federal school-building-aid legislation will, of course, carry more weight if those interested can agree on one general principle and one bill. School executives will want to keep in touch with Dr. Edgar Fuller, the executive secretary of the National Council of Chief State School Officers, at 1201 — 16th Street, N.W., Washington 6, D. C., for up-to-date information on such legislation.

Obtaining federal funds for building school-plant facilities is a pressing need that deserves to and no doubt will receive a careful hearing in the new Congress. However, federal appropriations for school construction are no substitute for, and cannot take the place of, funds for general current expense aid to education; and most of the school-building bills being drafted for introduction in the new Congress will be offered as complementary rather than as competitive measures.

Several members of the Congress have already made known their intention of introducing bills to authorize federal assistance for the construction of new public elementary and secondary schools in the form of grants in aid through state educational agencies when Congress reconvenes.

Senator A. Willis Robertson and Representative Schuyler Otis Bland, both of Virginia, have definitely stated that they will reintroduce the school-building bills (S. 2909 and H.R. 7057) "to authorize the making of grants and loans to the states to assist in providing adequate public elementary and secondary school facilities" that they first offered in the special session of the 80th Congress as an alternative to S. 472, the Taft Federal Aid to Education Bill.

If enacted the proposed Robertson-Bland legislation would make available to the states a total of $300,000,000 for outright grants and an additional $300,000,000 for loans that would run for a period of not more than 20 years at 2½ per cent interest and be secured by bonds of the local school unit that would be held by the Reconstruction Finance Corporation. These funds would be divided on the basis of the proportion of the total population to children of school age but the State Educational Authority could distribute a state's allocation on any basis it sees fit. All that is required is that this Authority furnish the Reconstruction Finance Corporation with a list of projects and the cost of each one. Grants could be made for any amount approved by the State Educational Authority up to half of the total cost of the facility with or without an accompanying loan. The same 50 per cent limit would apply to loans.

The bill providing for "loans and grants for construction, remodeling, improvement, and extension of school facilities" that Senator Pat McCarran, Democrat of Reno, Nev., is planning to introduce in the new Congress will present still another pattern for furnishing federal assistance for school-plant construction when and where needed. His proposal would authorize appropriations on a continuing basis without limitations as to time or amount and leave it up to the federal agency that will administer the program to submit to Congress budget estimates covering the annual need.

Under the terms of Senator McCarran's proposal grants amounting to 50 per centum of the cost and loans bearing interest at the rate of 2½ per centum per annum would be made available only upon approval of the proposed construction by the appropriate state educational authority. Furthermore, loans would not be furnished unless in the determination of the program's administrator the local school unit concerned would be unable otherwise to finance its share of the cost of providing such school facilities. The policy adhered to in a particular state would determine whether or not local private and parochial schools would be eligible to receive this financial aid.

Public School Survey and Construction Bill

At a recent conference convened in Washington, D. C., by the American Parents Committee, Inc., to preview welfare legislation to be submitted in the 81st Congress, officials of this committee announced proposals for a public school survey and construction bill "to help the states construct elementary and secondary public schools because of the emergency need due to the increase in the birth rate during and since the war."

A current draft of the proposed legislation available would authorize the following appropriations: (1) $5,000,000 for a survey of the school construction needs in the states — the funds to be distributed on a per capita basis of 5- to 17-year-olds, to be matched 50-50 by the states; (2) $40,000,000 annually for six years to be loaned by the Federal Works Administration to finance preliminary costs of advanced planning in order to get construction under way as rapidly as possible; (3) $500,000,000 annually for six years for

(Concluded on page 64)

So I asked . . .

"Why is TIME so essential throughout our New School?"

"Your School," said the architect, "runs on *TIME*."

Without *Time*, reliable and uniform, available to every room, either by automatic ringing of bells in the halls and outside—or better yet—plus Synchronous room clocks, School Administration suffers severely. TIME sets the pace for a coordinated Educational System. The Electric Program Clock, the most important part of a clock system, with an adequate number of bells, regulates all school activities, with classes changing in unison. There is no confusion—no wasted moments, as teachers check inaccurate watches, or an old key wound clock on the desk, only to find children in the hall, ahead of time.

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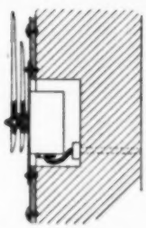
It is a fixture of convenience—an Investment for the Present and the Future.

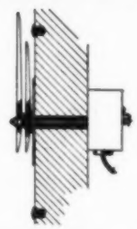
Room clocks help teachers subdivide period-time so their subjects may be fully covered. In study halls or library, the students are taught to allot the available time, and not spend all on one pet subject, to the exclusion of others, not so interesting or easy.

Have you written for our New Bulletin 180?

STYLE 042 — Here is a new and popular design in a special flush clock, using the wall as a dial. Low cost, but attractive and useful. Hands are exposed, and markers are raised and fastened to wall. Many marker modifications are available in dial sizes from 12" to 6 feet diameter. Movement can be recessed from front, or be a through-the-wall assembly, as illustrated at right. Markers and hands are aluminum, anodyzed any color, to provide wall contrast.



Front mounted clock movement in recess 5" square by 4" deep. Cover plate usually colored same as wall.



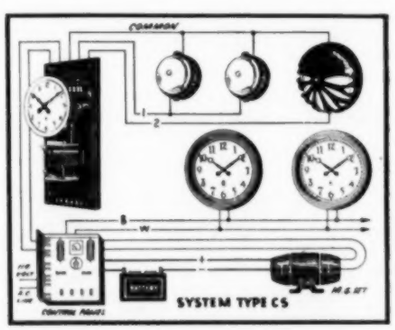
Thru-the-wall clock mount with extension shaft. Hole is 1" diameter. Excellent for outside clocks.

National All-electric Program clock with cover removed, to show simple self-contained controls.

The Key to Trouble-free coordination of school activity. Relieves School man of a responsibility that will soon pay for itself in Executive Time released to the important task of Education.

The two-circuit 2½ minute interval No. 42-12M clock fills most needs.

TYPE CS — The Uninterrupted, or Constant Service Clock and Program System. This is the very best and most complete of all clock systems. Extensively used in railroad stations, post offices, schools and colleges, where *Perpetual* correct time is demanded. Clocks are unaffected by power failures. In case there is an interruption in normal AC power, an automatic transfer switch starts up a stand-by Synchronous dynamotor, from energy supplied by an auto type storage battery. This supplies current to all clocks and bells, as long as the AC supply is off.



NATIONAL TIME & SIGNAL CORPORATION
21800 WYOMING AVENUE DETROIT 20, MICHIGAN

THE SCHOOLHOUSING SITUATION

(Concluded from page 62)

the construction of elementary and secondary public schools. Payments for construction would be made on a formula based on a federal per centum varying in proportion to the per capita income of the state with a 25 per cent minimum and 75 per cent maximum.

Federal Aid for School Facilities in Defense Areas

The new Congress will undoubtedly also give consideration to special federal aid for public school construction in districts where federally owned defense establishments such as army, navy, and air force camps and facilities are located.

As a result of hearings before the Subcommittee on Public Buildings and Grounds of the House Public Works Committee on the need for giving help to certain school districts burdened by public defense activities, last June the subcommittee's chairman, Congressman J. Harry McGregor of Ohio, requested the Federal Works Agency "to make a survey of emergency needs relative to construction of school facilities in areas where such circumstances are brought about by the influx of population caused by activities of our federal departments" and to report its findings to the 81st Congress. The FWA in co-operation with the U. S. Office of Education has for several months been engaged in making a study of emergency school-plant needs growing out of federal activities.

Now nearing completion, this survey of the school building situation in the nation's defense areas will provide information on the average daily attendance in each such school district, the average daily attendance occasioned by the federal activity, estimates of the number of classrooms and other buildings needed, the square footage or floor space required and what it will cost, and data concerning the availability of local funds to meet this expense.

A legislative possibility in regard to providing federal financial assistance to school districts affected by present government defense activities is that such aid might be granted through reactivating the so-called "Lanham Act" and appropriating the required sums.

School Building Activities of American Institute of Architects

In recognition of the fact that next to insufficient housing, the shortage of school-plant facilities is probably the foremost building problem in the United States today, the American Institute of Architects has selected research regarding school buildings as a major item of their current program of collaboration with the Producer's Council — an organization of leading manufacturers of building materials and equipment.

As an outgrowth of this development the American Institute of Architects has recently set up a Committee on School Buildings[2] to study principles of planning up-to-date schoolhouses and to recommend how architects can help in the planning of better schools. The committee will seek to bring about increased understanding between architects and educational consultants as to their respective functions. Its activities will include collecting and collating pertinent research; co-operating with governmental and nongovernmental agencies in the determination of planning standards; evaluating the quality and reliability of the advertising issued by manufacturers.

This year the association's National Honor Awards Competition will be limited to single dwellings and to school buildings. Entries will be submitted by the local chapters of the American Institute of Architects and will be sent to Houston, Tex., to be judged in advance of the Annual Convention, March 15–18, 1949, where the winners will be announced. Both the owners and the architects will receive certificates of awards. The winning entries together with those receiving honorable mention will constitute a traveling exhibit.

Walter A. Taylor, the Education and Research Director of the American Institute of Architects, stresses that with the increasing complexity of modern buildings it is most important that the requirements for all of the numerous types of facilities for schools — including equipment of all kinds for sanitation, lighting, heating, ventilation, and so on, as well as for teaching — be co-ordinated. He points out that the architect is the professional co-ordinator of the numerous techniques and trades and crafts that go into the creation of a building and believes that school officials should retain an architect at the outset of their deliberations on planning new school plants to aid even in site selection and in correlating the needs of the educational program with city planning in all its aspects including transportation and zoning regulations.

[2]The members of the American Institute of Architects Committee on School Buildings are: Ernest J. Kump, San Francisco, Calif., chairman; A. Thomas Brown, Tucson, Arizona; William Wayne Caudill, College Station, Tex.; John W. McLeod, Washington, D. C.; Lawrence B. Perkins, Chicago, Ill.; Howard Dwight Smith, Columbus, Ohio.

COMING CONVENTIONS

Jan. 6. Tennessee School Boards Association, at Nashville. Secretary, Dr. John A. Thackston, University of Tenn., Knoxville. Exhibits.

Jan. 6–7. **Tennessee Public School Officers' Association,** at Nashville. Headquarters, Andrew Jackson Hotel. Chairman, Quinnie Armour, Bolivar. Attendance, 350.

Jan. 27–29. **American Association of Physics Teachers,** at New York, N. Y. Headquarters, Columbia University. Chairman, H. K. Schilling, Pennsylvania State College, Penn State, Pa. Attendance, 300–400.

Feb. 3–4. **Pennsylvania State School Directors' Association,** at Harrisburg. Headquarters, Penn Harris Hotel. Secretary, P. O. Van Ness, 222 Locust St., Harrisburg. Exhibits, P. O. Van Ness. Attendance, 1500.

Feb. 3–4. **Idaho School Trustees Association,** at Boise. Headquarters, High School Auditorium. Secretary, J. C. Eddy, Boise. Attendance, 250.

Feb. 7–8. **Nebraska School Boards Association,** at Lincoln. Secretary, Charles Hoff, Univ. of Omaha, Omaha, Neb. Exhibits, Beth Christensen, Univ. of Omaha. Attendance, 350.

Feb. 10–11. **Minnesota School Boards Association,** at St. Paul. Headquarters, St. Paul Municipal Auditorium and Hotel Lowry. Secretary, Otto W. Barbo, Braham, Minn. Attendance, 2000.

Feb. 11–12. **Georgia Education Association,** at Atlanta. Secretary, J. Harold Saxon, 704 Walton Bldg., Atlanta.

Feb. 17–18. **Oklahoma Education Association,** at Oklahoma City. Headquarters, 306 Oklahoma Natural Bldg. Secretary, C. M. Howell, Oklahoma City. Exhibits, Sallie Burke, 306 Oklahoma Natural Bldg., Oklahoma City. Attendance, 7000.

Feb. 20–23. **American Association of School Administrators** (western division), at San Francisco, Calif. Secretary, Worth McClure, 1201 Sixteenth St., N.W., Washington 6, D. C. Exhibits, Carl Burns, Washington. Attendance, 5000–6000.

Feb. 26–Mar. 2. **National Association of Secondary School Principals,** at Chicago, Ill. Headquarters, Congress Hotel. Secretary, Dr. Paul E. Elicker, 1201 Sixteenth St., N.W., Washington 6, D. C. Exhibits, Dr. Paul E. Elicker. Attendance, 1500.

Feb. 27–Mar. 2. **American Association of School Administrators** (central division), at St. Louis, Mo. Secretary, Worth McClure, 1201 Sixteenth St., N.W., Washington 6, D. C. Exhibits, Carl Burns, Washington. Attendance, 5000–6000.

Feb. 28–Mar. 2. **Department of Rural Education, N.E.A.,** at St. Louis, Mo.

Feb. 28–Mar. 2. **Department of Rural Education,** N.E.A., at St. Louis, Mo. Headquarters, Statler Hotel. Chairman, Howard A. Dawson, 1201—16th St., N.W., Washington 6, D. C. Attendance, 500.

SCHOOL BONDS AND SCHOOL BUILDING CONTRACTS

School building construction contracts let during 1948 as well as sales of bonds experienced a decided increase.

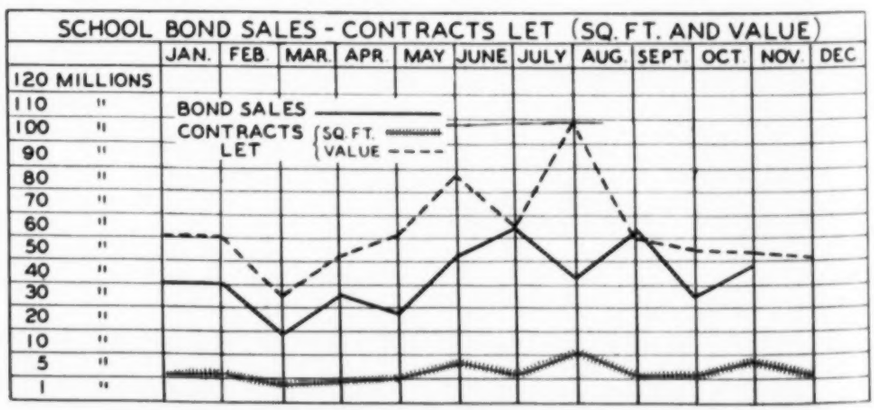
Year	*Bond sales*	*No. of buildings*	*Contract cost*
1948	$535,376,922[1]	4754[2]	$755,080,800[3]
1947	$330,127,238	3433	$409,838,080

Final figures will be published in March.

[1]Bond sales figures for November and December are estimated on the basis of 40 per cent increase over November and December, 1947, although the increase for the first nine months is 50 per cent greater over 1947.

[2]Contracts let number of projects for December are estimated at 30 per cent over December, 1947.

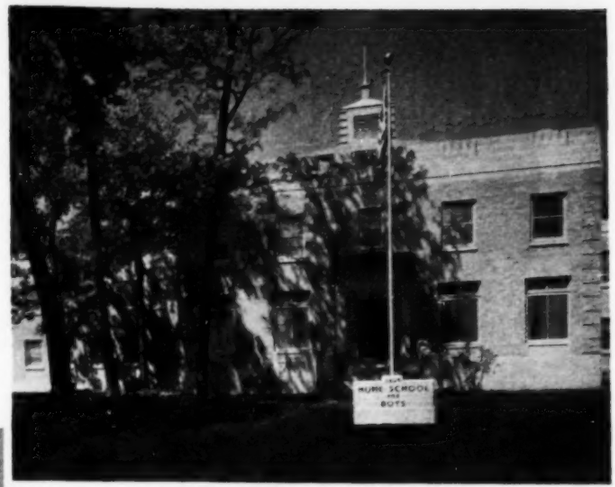
[3]The valuation is estimated for December at 50 per cent increase over December, 1947. The increase in valuation over 1947 runs much higher than this, nearly 100 per cent.



The school bond and building record for 1948.

New Glen Lake School For Boys Has Modern Tubular Furniture Throughout

All classrooms in this modern Glen Lake, Minnesota school are equipped with Heywood-Wakefield tubular steel furniture. (Installation arranged through Farnham Stationery & School Supply Co., Minneapolis, Minn., Distributors for Heywood-Wakefield Co., Menominee, Mich.)



HEYWOOD-WAKEFIELD
EST. 1826
REG. U. S. PAT. OFF

BECAUSE of its rugged construction and flexibility in meeting varying classroom needs, Heywood-Wakefield welded tubular steel furniture was a logical selection for this fine new Glen Lake school. Illustrated above is a typical classroom, all of which are equipped with Heywood-Wakefield table desk S 1008 and chair S 915. Both are available in graded sizes, and provide a combination which can be arranged easily in a variety of ways.

Write today for the illustrated folder showing the complete line of Heywood-Wakefield school furniture. Heywood-Wakefield, School Furniture Division, Menominee, Mich.

SCHOOL FURNITURE DIVISION

SCHOOL BUSINESS PUBLICATIONS

Report of the Technical Working Party on School Construction

Issued by the Ministry of Education. Paper, 44 pp., 35 cents. Available from the British Information Services, New York 20, N. Y.

This publication summarizes the findings of a "working party" of 11 experts of the British Ministries of Education, of Works, and of Supply, and of four important organizations of architects. These men carried forward the studies initiated in 1940 by a committee appointed by the Ministry of Education, to promote the rapid and economical construction of school buildings, necessitated by the losses due to the war, the shifts in population, and the obsolescence and wear and tear of the past two decades.

The present report recommends improvements in the standardization and prefabrication of school buildings suggested by the earlier committee. The working party called attention to the unwisdom of tying the school building program to the use of one particular system of construction and one group of materials. Educational projects should be as economical as possible of labor and of money. If the entire needs are to be met within a reasonable period considerable use of prefabrication is necessary. The working party does not favor a "national school" plan or type but urges independent planning based on close framework of components, factory constructed and assembled in part or the whole of the required structures. One of the two alternative plans recommended is the use of a 3 ft. 4 inch grid to be used in all construction. The second plan recommends the limitation of the spans for teaching areas to 24 ft. 9 in., and 22 ft. 9 in., for which a 10-ft. structural bay would be economical and a very limited number of standard spans could be developed for classroom and corridors. Assembly halls, in the opinion of the working party, should be considered as separate plan and construction units, complete in themselves, and to be erected by traditional methods or prefabrication as the local situation may suggest.

The whole report is practical in suggesting the adjustment of local programs to available standardized materials, to the treatment of a number of schools as a single project. The need of vastly more research in improving acoustics, lighting, etc., is pointed out. Finally, the working party urges the development of variety in surface textures of materials, the combination of orthodox methods and traditional materials with factory products to assure fresh solutions of problems of plan and design.

Purchase, Care, and Repair of Athletic Equipment

By Kenneth L. Meyer. Cloth, 160 pp. Educational Publishers, Inc., St. Louis 1, Mo.

This book discusses the selection, buying procedures, management, physical care, and repair of expendable and permanent equipment and supplies used in athletic games and physical education. The treatment is strictly that of an athletic coach who is concerned to obtain the most usable and durable items needed, and who insists on balanced purchases for all activities with the least fuss and feathers. The section devoted to the specifications and construction of clothing, balls, and other articles is inclusive; the chapters on the management, care, and accounting of equipment is based on successful plans used in Indiana high schools. The book deserves a place in the working library of coaches, in city school systems. School-business managers and their purchasing men will find it a help in understanding the thinking of coaches and in developing buying, inventory, and replacement policies that satisfy the total school needs with economy and efficiency.

Bus Facts

Paper, 82 pp. National Association of Motor Bus Operators, 8239 — 17th St., N.W., Washington 6, D. C.

This statistical summary of bus operation includes a census of school bus service, indicating that, as of December, 1947, a total of 85,872 school buses and 17,424 other vehicles were in operation. These cost $130,613,256 for wages, operation, and maintenance.

School-Bus Maintenance

By E. Glenn Featherston. Price, 15 cents. Bulletin No. 2, 1948, of the U. S. Office of Education. U. S. Government Printing Office, Washington 25, D. C.

This second bulletin in a series on the administration of pupil transportation takes up the general problems of organizing and administering a maintenance program for school-owned buses. It recommends a definite weekly check list, a monthly or 1,000-mile inspection report, an annual inspection report, a bus-driver's report on bus repairs, definite recommendations for garage service reports, gasoline reports, body maintenance, care of various mechanical tools, and finally an outline for personnel management.

City School Finance in 1947

Paper, 56 pp. U. S. Department of Commerce, Washington, D. C.

School authorities will find in this report a complete picture of all expenditures in 37 cities having a population of 250,000 and over. It includes statistics of operational expenditures, debt service, retirement systems, etc.

School Plant Assistance

By Ray L. Hamon. Mimeographed, 40 pp. U. S. Office of Education, Washington, D. C.

This study outlines in brief form, the legal plan of school plant assistance in the several states. At present, 32 states have school plant regulations; 27 states provide school plant specialists in the state departments of education. By implication, this study makes it clear that every state needs state regulation of physical plant facilities and a program of state assistance to local school districts.

Specifications for Testing Methods for Coal and Coke

Standard specifications and test methods for coal and coke are to be found in a booklet recently published by the American Institute for Testing Materials. Copies at $2 may be had from the Society at 1916 Race St., Philadelphia 3, Pa.

Financial Data of Los Angeles City School Districts, 1948–49

Compiled by the director of the budget division. Los Angeles schools. Paper, 37 pp. Board of Education, Los Angeles, Calif.

A budget statement containing statistical and financial data, together with factual information pertaining to the operation of the schools. Among the topics included are assessed valuations, bonded indebtedness, the budget, expenditure classifications, enrollments, per capita costs, revenues, salary schedules, tax rates, valuation of school property, and housing facilities.

SCHOOL ADMINISTRATION NEWS

THE URBANA READING PROGRAM

The public schools of Urbana, Ohio, under the direction of Supt. Dale D. Heskett, have been carrying on a reading program in the elementary schools. The reading materials for pupils have been chosen in such a way as to provide a controlled vocabulary with a careful gradation in difficulty. In this direction all of the reading activities are centered around a basic reading series, with a wide selection of supplementary books. These books utilize the common experiences of the children and provide for a gradual growth in concepts as they move forward through the grades, beginning with the experiences of home and family and culminating in the more varied experiences of a wider environment.

In each grade provision has been made for meeting the individual differences of children. It has been found that in each grade there are children who for some reason are retarded a year or two in reading. If they have failed to acquire the ability to read, they have little interest in subject matter, and are inclined to be frustrated or unhappy. To remedy the situation a remedial program has been set up, the aim of which is to discover individual needs, and to provide a modified form of individual instruction. Pupils who need help are taken from their classrooms for short periods once or twice a week, and are instructed by methods suited to their individual needs. Under another plan, retarded pupils do not attend the special classes, but are provided with new material which is not too difficult for their level of achievement and gradually increases in difficulty. Pupils in both groups are encouraged to improve their own record without reference to their classmate's achievement. They are helped to make substantial progress according to their own ability.

OPERATION OF FREEPORT AREA JOINT SCHOOLS SUCCESSFUL

Since July 5, 1948, the Freeport Borough Schools of the city of Freeport, Pa., and the adjoining South Buffalo township and Buffalo township schools have been operating under a plan called the Freeport Area Joint Schools. Supt. F. Lee Myers reports that the new plan which takes care of grades 1 to 12, inclusive, provides the township elementary schools with supervision, music instruction, and with a spirit of unity. A joint high school is maintained for a district enrolling 1500 students and employing 50 teachers, in addition to principals, clerks, and a school nurse.

The two townships have bought an equity in the present high school building and have combined their assets with Freeport to construct a six-room addition to the high school, which will be ready for occupancy in September, 1949. New plans for the future call for the erection of elementary buildings to house grades one to six, making a new elementary center in each of the original districts. When this has been accomplished, nine small rural schools will be closed.

More important than the physical changes effected under the plan is the new attitude and spirit of co-operation shown by directors, teachers, students, and the public at large. The joint school board includes 15 members, with much of the work delegated to committees. Satisfaction with the reorganization appears to be general and there is every reason to believe that the year 1948–49 will continue to be pleasant and profitable. Much of the credit for the successful operation of the new plan is due to F. Lee Myers, supervising principal of the Freeport Area Joint Schools.

INNOVATIONS AT CHARLEROI, PENNSYLVANIA

With the opening of the school year 1948–49, the school board of Charleroi, Pa., has installed 60 germicidal lamps in all classrooms occupied by children in grades one to three, as well as in other areas such as toilet rooms.

Supt. W. H. Clipman reports that the summer recreation program has been expanded from one center to four different centers, with the number of instructors increased to 16.

The special education program in the schools has been enlarged to include students of both elementary and secondary school levels.

The salary schedules for both professional and service employees have been revised so that they are far in excess of the mandated minimum. Payment for employees absent from duty has been provided in a rather generous manner.

The elementary school program has been completely revised. A new elementary curriculum is being organized under the direction of the Department of Public Instruction.

The board is sponsoring a large extension program during the winter season, from October to May. During this period the schools are offering recreation, vocational shop training, veteran apprentice training, cultural subjects, and such further courses as commercial illustrating, and Spanish.

WASHINGTON COUNTY SUPERINTENDENTS HOLD WORKSHOP

The county superintendents of the state of Washington met in Olympia, November 7 to 11, at which time they discussed the proposal for educational planning a year ahead, and not for a school term alone. Superintendents, deputies, and district superintendents who attended the conference were more than 300.

SCHOOL BOARD CONVENTIONS

MONTANA SCHOOL HEADS ASK EQUAL TAXATION

The Montana School Boards Association, at its two-day meeting in Great Falls, November 12 to 13, discussed school legislative proposals, dealing chiefly with finance. Nearly 300 delegates were present and it was the largest attendance on record.

The legislative program had as its chief aim the equalization of present school taxation on a county-wide and state-wide basis. The proposals were presented by Randall Swanberg, chairman of the association's legislative committee. Paul K. Harlow, chairman of the state citizens' committee on education, discredited any hope that state property taxation would reduce school costs individually. He proposed that school funds taxation be based on the ability of the individual to pay.

The Association considered seven resolutions. It defeated a resolution asking that each school board in the state be compelled by law to become a member of the association. A second resolution that the Association accept the principle of the work of the Montana Citizens' Committee was tabled. A third resolution expressed thanks for courtesies received. A fourth approved a constitutional amendment to change the present 3 per cent assessed valuation to 6 per cent for school building purposes. A fifth resolution opposed federal aid to education. A sixth resolution called for a conference to take up plans for a co-ordinated program at the next legislative session. A seventh resolution praised the Association's legislative committee for its fine work.

The meeting closed with the election of officers for the next year: president, B. H. Gullickson, Big Sandy; first vice-president, V. F. Gibson, Great Falls; second vice-president, W. A. Christiani, Glendive; third vice-president, Randall Swanberg, Great Falls; secretary-treasurer, J. L. Gleason, Livingston.

NORTH CAROLINA SCHOOL BOARDS ASK MINIMUM TEACHERS' WAGE

The North Carolina School Board Association, at its meeting in Chapel Hill on November 12, took up such important problems as teachers' salaries, new school construction, a program of supervised instruction, federal aid to education, and a new teaching load. More than 500 members were in attendance. Governor-elect W. Kerr Scott, said it is time to bring the school facilities of the state up to par and give the teachers the recognition they deserve. He cited the need for an outlay of tremendous sums for a program of permanent improvements.

The delegates adopted resolutions calling for a $50,000,000 construction and equipment program for school buildings and a minimum wage of $2,400 for teachers.

The Association elected officers for the next year. They are: president, Henry A. Scott; vice-president, C. W. McCrary, Ashboro; executive committee, Thomas H. Banks, Garner; R. M. Carr, Greensboro; and J. M. Morrow, Statesville.

OKLAHOMA SCHOOL BOARDS AND LEGISLATION

The Oklahoma School Boards Association has recently begun the publication of bulletins on significant problems confronting the boards of education of the state. The first bulletin, published in December, 1948, discussed sales, income, beer, and freight-car taxes as sources of revenue for the state and its agencies.

The statistics quoted make clear that the schools receive no direct return from sales taxes, of which 2 per cent is earmarked for old age assistance and welfare. Returns from the income taxes, the beer tax, and the freight car tax similarly are placed in the general revenue funds of the state and the schools receive no direct help. The Association has as a portion of its legislative program, the objective to secure legislation which will provide as a reliable source of state revenue, a percentage of the gross income of the state.

The Association also is supporting legislation for the appointment of members of the State Board of Education, and through them of a state superintendent of public instruction.

The Association will, during 1949, encourage plans for the further reorganization of school districts for administrative purposes and will advocate the certification of school administrators.

VOTERS APPROVE $216,000 SCHOOL-BOND ISSUE

The voters of Drumright, Okla., have approved a school-bond issue of $216,000, of which $51,000 is to be used for the repair and modernization of the high school and two elementary buildings. The remainder of the fund will be used for the construction of a new elementary school building. The board of education has called for bids on the new building and will shortly award the contract.

ALBUQUERQUE SCHOOLS CONSOLIDATED

The State Board of Education of New Mexico has approved the consolidation of the Bernalillo County and Albuquerque school systems. Only one country district, No. 24, was not included in the merger. It gives almost all of the county one school system. John Milne, superintendent of the Albuquerque city schools, was named head of the system. While the merger becomes effective January 1, the systems will operate separately until July 1 of the next fiscal year.

APPROVE SCHOOL-BOND ISSUE

Supt. Clark L. Banow reports the happy outcome of a school-bond election on November 30, when an $8,000,000 issue for school building construction was approved by the voters of East Baton Rouge, La. The vote was as follows:

	No. of votes	*Amount in dollars*
For	3,364	$12,804,424
Against	111	709,317

This will provide eleven and one-half million dollars for schoolhouse construction on a parish-wide basis.

"SCHOOL OF TOMORROW" EXHIBIT

The "School of Tomorrow" exhibit, held in the Metropolitan Auditorium at Long Beach, Calif., during the convention of the California Association of School Administrators, was the most significant assembly of practical means of meeting schoolhouse planning and construction problems ever presented. It exemplified the best obtainable California skill and experience in arrangement, grouping, and techniques for study and comparison. The participating architects put forth their best endeavors to make the display an outstanding event — and it was just that.

SCHOOL BUILDING NEWS

► The board of education at Midland, Mich., has sold $1,500,000 in bonds, due October, 1949–53, at 100.068, with a 1¼ per cent coupon and a net interest rate of 1.7295 per cent.

► Campbell, Ohio. The school board has sold its school bond issue of $334,000 to a Cincinnati investment firm, at 2¼ per cent interest, and a premium of $4,645.

► Evanston, Ill. The school board of Dist. No. 75, has sold its school-bond issue of $1,620,000 to an investment firm, at 101.59 for 2s, and a premium of $25,758.

► Seaside, Ore. The school board of Dist. No. 10 has let the contract for the construction of a new junior high school building, to cost approximately $241,000. In addition to 9 classrooms, the building will contain a library and a gymnasium.

► The Cook County, Ill., School District No. 5 has sold $1,620,000 worth of school building bonds at 101.59 for 2s. The bonds were reoffered to yield from .90 per cent for those maturing October 1, 1950, to 2 per cent for those maturing October 1, 1968.

► The cities of Wilson, Newfane, Porter, and Cambria, N. Y., have sold $260,000 worth of school building bonds, due December 1, 1949–68, to two investment firms, at 100.36 for 2.10s.

► Roseburg, Ore. The voters recently approved a school-bond issue of $895,000 for the construction of additions to three elementary schools, and a 22-room addition to the senior high school. The new housing facilities are being provided to meet a large school enrollment in the past five years and in anticipation of a further gain in pupils within the next six-year period.

► The common School Dist. No. 18, Amherst, N. Y., has awarded $400,000 in school building bonds, due December 1, 1949–68, to local bidders, at 100.63 for the obligations, with a 2.20 coupon.

► Westfield, N. J. The voters have approved a school-bond issue of $2,700,000 for a proposed senior high school building. In addition to a number of classrooms, the building will contain an auditorium, two gymnasiums, a study cafeteria, a library, and shops for industrial arts.

► Portsmouth, Va. The school board has let the contract for the construction of the John Tyler Elementary School, to cost approximately $500,000. Plans for the building are being prepared by Architects Walford & Wright, Richmond, Va.

► Lakin, Kans. Construction work has been started on the new grade school building, to cost approximately $250,000.

► New York, N. Y. The city board of estimate has approved the capital outlay program for new schools recommended by the City Planning Commission. It has allotted $48,146,000 of debt-limit funds for 15 new schools or additions, whereas the original recommendation called for 14 projects. In its final action, the board approved a new building for Public School 192, in Manhattan, and provided funds for foundations and steel frame for Junior High School 125, in the Bronx.

The $48,146,000 appropriated for new projects in the 1949 building program constitutes 22.2 per cent of the funds available for capital construction within the city's debt-limit funds. In addition, the board has set aside $13,793,000 for new schools to be built as part of housing projects. The money is to be drawn from allowances for public housing outside the city's debt limit.

To date, 7 buildings have been completed and occupied, 10 are under construction, 13 are scheduled to be completed in the first half of 1949, and 23 are to be started in 1949.

► Lebanon, Ohio. The school board is completing a grade school addition to the present high school. A $175,000 gymnasium will be added to the project. Bonds for the improvements have been voted and will be sold shortly.

► Maywood, N. J. The school district has sold $425,000 worth of school bonds, due October 1, 1949–68, at 100.007, for 2.20s.

► Mansfield, Ohio. The voters have approved a $2,250,000 school-bond issue, which is to finance the completion of a school building program begun in 1945. The original bond issue was passed to build six new buildings and remodel five other structures.

PHILADELPHIA SCHOOL NEWS

The Philadelphia board of education has announced a $47,344,000 budget for 1949, which is $1,500,000 more than the 1948 budget. Walter Biddle Saul, board president, said the board estimates that school costs will exceed the revenue by $1,500,000 in 1949. On top of this are a $255,000 deficit for 1948 and $1,660,000 carried over from 1947. The deficits are notwithstanding revenue yielded by the new four-mill personal property and the one-half to one-mill mercantile taxes authorized by the last Legislature.

The board, for next year, will continue the 11¾-mill real estate tax, the maximum allowed under the state law, and the two special taxes.

The 1949 budget estimates show a $506,734 increase over this year's real estate yield — a figure expected to be even higher when assessments are reviewed. In the light of this year's initial collections, estimates of the mercantile tax yield will be decreased by $100,000, and the personal property tax estimate by about $250,000. The state appropriation, also fixed by the Legislature, will be increased by $572,000.

A deficit of $3,000,000 in 1949 for Philadelphia's public schools is predicted by Supt. Louis P. Hoyer. He said $2,000,000 of this would be caused by recently granted teacher pay boosts, while the rest would be a carryover from 1948.

Hoyer claimed the budget was $10,000,000 below what it should be and that efforts would be made to have the Legislature pass a law enabling the school system to increase its budget.

Calling the extra ten million "the minimum increase needed for the operation of local public schools," Mr. Hoyer pointed out that the present budget of $45,000,000 is about the same as in previous years. He explained the increase was necessary principally so that teachers' salaries could be still bettered and so that the size of classes could be cut. He figured that to reduce each of the classes by only four pupils would cost $2,000,000 for the extra teachers who would be required.

To Philadelphians with complaints about their schools, the board of education now has an "open door" policy. A standing invitation for that purpose has been given by the board president, Walter Biddle Saul. He said either he or Secretary Add B. Anderson, would — by appointment preferably — meet the public on Saturday mornings at the School Administration Building.

LOUISIANA VOTERS APPROVE CONSTITUTIONAL AMENDMENTS RELATING TO EDUCATION

The Louisiana public schools achieved a partial victory in November in a referendum vote for constitutional amendments intended to improve the financing and administration of the state school system. The amendments accepted are:

Amendment 14, increasing the gasoline tax to one cent per gallon, one half of which will be devoted to school purposes.

Amendment 18, permitting the state to enter upon regional educational contracts.

Amendment 22, permitting the state to release to the parish school boards all proceeds from sales of 16th section lands granted the state in 1848. The amendment will also enable the state to accept all federal school aid to be voted by Congress in the future.

Amendment 32, transferring all municipal property in New Orleans devoted to school use, to the board of education of New Orleans, with the exception of the Delgado Trade School.

Amendment 34, authorizing the New Orleans school board to increase the school tax from 7 to 10 mills and permitting up to 5 mills additional if approved by the voters

Amendment 40, allowing an increase of the school bonded indebtedness of parish-wide or special school districts from 10 to 15 per cent.

WORCESTER EDUCATES SCHOOL JANITORS

If Worcester, Mass., school janitors lose friends it is strictly their own fault. The one hundred or more custodians have had the advantage of a course in psychology, taught by Dr. Lawrence A. Averill, of the Worcester State Teachers College. Subjects have included "How to Get Along With Teachers," and "How to Get Along With Children."

Whether the course has had any effect or not, the janitors or custodians are happy because the school committee has voted to place them on a 40-hour week and to give most of them pay raises totaling $7,025.

The committee also voted to hire 38 more custodians. The 40-hour week, pay raises, and the hiring of additional men will go into effect during the spring when the budget is adopted by the city council.

An administrative division to handle building maintenance and operation will be set up, at an estimated cost of $26,000. It will be headed by a new third assistant superintendent to be paid $7,500 a year. He will have two assistants each receiving $6,000 a year.

Under the new system custodial expenses will be boosted about $409,957, or about $106,000 above last year. Custodians have been receiving a flat rate of pay, without overtime, regardless of the hours they worked. The school committee voted $23,104 for overtime pay to custodians for week-end care of heating plants and other overtime work. The new administrative division will run all school building affairs when the school committee takes over complete responsibility for the buildings under Plan E in January, 1950. The Bureau of Public Buildings is now responsible.

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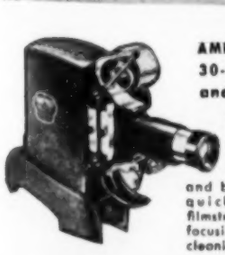

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► The board of education at Chandler, Ariz., has been criticized by the N.E.A., "as an example of the need for fair dismissal procedures." In an investigation of the dismissal of five teachers who had taken part in a campaign for higher salaries, the N.E.A. found that the board had acted in an "unprofessional manner" because it (1) failed to give a proper notice of dismissal, (2) to state its reasons for the dismissal, and (3) to give the teachers an opportunity to remedy the alleged defects. The board of education declares that it acted within its rights under the law.

► Boston, Mass. The school committee has increased the salaries of its administrative officers, effective September 1, 1948. The salaries have been set as follows: superintendent of schools, $15,000; business manager, $12,000; assistant superintendents of schools, $10,000; secretary to the committee, $7,500; school custodian, $7,500.

► Waltham, Mass. The school board has adopted a four-point policy governing the salaries of school custodians during the year 1949. Under the new plan, custodians will be given increases of $400 for the 1949 school year, raising the maximum salary from $2,350 to $2,750. Annual increments of $150 per year will be given for five years for new personnel. The regular increments of $75 for 1948 were granted.

► Warsaw, Ind. A new public service program, Warsaw Schools on the air, is being sponsored by the city schools and Radio Station WRSW. Five broadcasts of 15 minutes each are planned for each week in the school year.

► St. Louis, Mo. Frank P. Nagel, a member of the school board, has proposed a strict enforcement of the new board rule limiting members to expense allowances of $20 a day, plus train fare when they attend out-of-town conventions. The rule was adopted following public criticism of a $1,510 allowance to two members for a trip to the Pacific Coast this year. Mr. Nagel, who attended a four-day convention in Detroit recently, said that he spent considerably more than the $80 and train fare allowed him by the board.

► The voters of Edgerton, Wis., refused, by a vote of 2 to 1, to reorganize the school district and to substitute a city board of education for the present district school board. Edgerton is a common school district in a city of less than 10,000. The members of the board are elected at an annual school meeting at which authority is given directly by the voters to adopt a budget and to conduct all other school business. The referendum in November would have placed the board under the mayor and the city council, and would have taken from the people the direct authority to pass on major fiscal and administrative policies.

A committee of citizens who opposed the change in the district, pointed out that the school board has been particularly competent and its conduct of the schools entirely satisfactory. The board has a cash balance of $30,000 and is offering a balanced educational program.

► At the general election held November 2, in the state of Wyoming, the voters approved amendment No. 4, which permits a state tax levy of six mills on the dollar of the assessed valuation of the property in the state each year for school purposes. The proposition was carried by a 9000 majority. If the legislature sees fit to designate the full six-mill tax, the public schools of the state will eventually receive $2,800,000 per year for school purposes.

► Revere, Mass. A record-breaking budget of $1,332,023 has been adopted by the school board for 1949. This budget represents an increase of $192,008 over 1948. A large part of the increase is due in salary increases for the school personnel.

► Louisville, Ky. The school lunch program is "out of the red" and there is a slight profit, according to Supt. Omer Carmichael. The audit of the books showed that there is a profit of $3,402. Stewart Campbell, a board member, suggested that $50,000 advanced for the lunch program last winter, be used for improvement of the lunchroom equipment.

► The Oklahoma State Supreme Court has recently rendered a decision, which adds three fourths of a million dollars to the budgets of half the school districts in the state.

The Okmulgee school board has filed an action with the Supreme Court, seeking to determine the amount of state aid apportionments to school districts. The state had withheld the funds due the schools for two years, pending the outcome of the present Supreme Court's ruling.

After consideration of all the facts presented, the court ruled that the defendants — the state boards and the state director of finance — should pay to the plaintiff and to the other school districts and separate schools similarly situated, a proportionate and pro rata share of the funds which are now, or may be, available according to the stipulation between the parties and under the law.

► Fall River, Mass. The 1949 budget of the school board calls for $2,417,949, which is an increase of $253,000 over 1948. The administrative budget of $1,817,898, which is $121,283 higher than in 1948, includes $1,697,621 for teachers' salaries, and $120,177 for administrative expenses.

► Somerville, Mass. The school board has adopted a budget of $2,169,900 for 1949, of which $2,022,575 is for teachers' salaries. Pay increases for teachers call for a total of $210,000.

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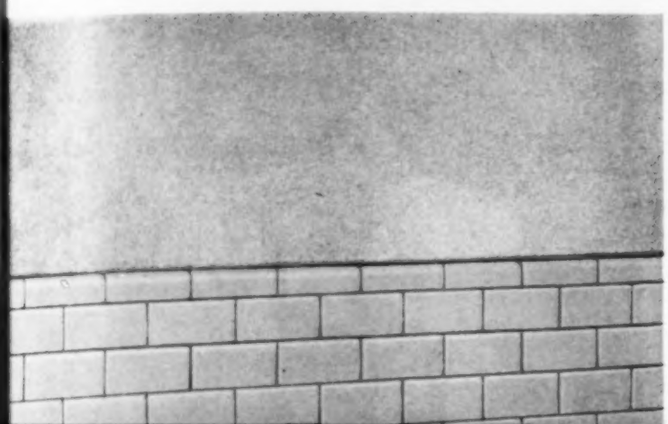

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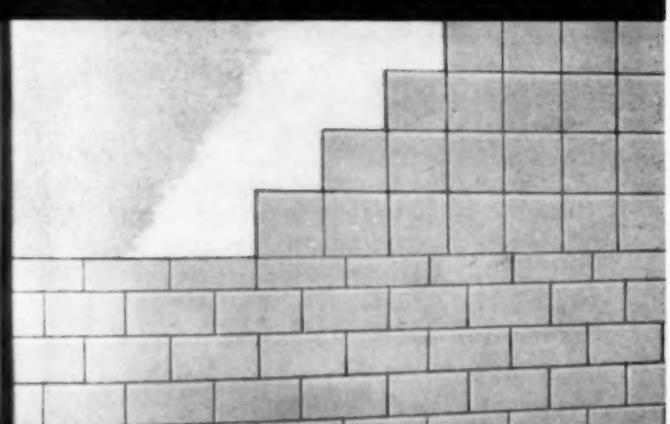

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BETTER HOUSING OF COUNTRY CHILDREN THROUGH CENTRALIZATION

(Concluded from page 49)

The scores given for general service rooms in the centralized schools averaged nearly three times those given in the noncentralized areas.

Administrative Rooms

The need for general and private offices for administrative personnel, teachers' rest rooms and workrooms, clinics, student activity rooms, and book and supply rooms has only recently been recognized. It was found, that in the older buildings these rooms were either missing or were makeshifts. In the noncentralized buildings the administrative rooms were generally inferior.

Small Rural Schools

Since 34 per cent of the elementary pupils and 6 per cent of the secondary pupils in the noncentralized areas and 7 per cent of the elementary pupils in the centralized areas attended rural schools of from one to four rooms, the small rural school building was an important factor in comparing the housing provided for pupils.

Ninety per cent of the small buildings failed to meet the 26-year-old standards used in this survey. Many of these buildings were built before the turn of the century, some of them dating back to 1850, and little had been done to modernize them, or even to keep them in repair. At least half of them should be condenmed as unsuitable for human habitation and only a half dozen could with any sincerity be referred to as attempts to provide suitable housing for small groups of pupils.

Thirty-eight of these buildings had insufficient natural light, and although 47 had electric lights, these were often inadequate. Four had no artificial lights whatever and one had antiquated gas lights. Thirteen buildings were heated with unjacketed stoves, 30 had circulating heaters or jacketed stoves, often with no provision for fresh air intake, and only 7 had modern furnace or radiator heating units. Fourteen schools had no water supply on the site, being forced to carry water from neighbors, 17 had hand pumps in wells, and 21 had running water. Twelve had pit privies, 26 had chemical toilets, and 14 had flush toilets, although one of these had no running water with which to flush them. Many of these buildings were in isolated locations; only three had telephones.

The centralized school service areas had generally solved the small school problem by closing these buildings. Two notable exceptions were found where new and modern two-room buildings had been erected by centralized districts in remote areas. The facilities and equipment in these buildings compared favorably with that of the 12-grade schools in the parent districts.

The noncentralized areas were less fortunate. Many of the small schools would have closed, but the near-by 12-grade buildings were already overcrowded and obsolete and could not accommodate additional pupils. The only solution appeared to be centralization with a complete new building program.

Summary

The main school plant of the average centralized school service area was greatly superior to that of the average noncentralized school service area in providing satisfactory, modern housing for the pupils.

A much larger percentage of the pupils were housed in the main buildings in the centralized areas than in the main buildings in the noncentralized areas.

The average small rural school building did not provide satisfactory housing for the pupils. The centralized school service areas were superior to the noncentralized school service areas both in the improvement of and in the elimination of the small rural schools.

THE EDUCATIONAL POLICIES COMMISSION

The role of the schools in the face of continuing international tensions is one of the two major studies to be undertaken in 1949 by the Educational Policies Commission of the National Education Association. A second major issue is the role of the public schools in developing moral and spiritual values.

Among the four new members of the Commission are Dwight B. Eisenhower, Henry H. Hill, William Jansen, and Eugene H. Herrington.

FINANCE AND TAXATION

► Medford, Mass. The school board has approved a $2,146,066 budget for 1949, an increase of $167,746 over 1948. The amount to be raised by local taxation is $1,942,351. The larger part of the increase is due to step-rate increases in salary for teachers and pay boosts for janitors.

► Chicago, Ill. The school board has adopted a budget of $105,146,000 for 1949, which is an increase of $1,685,000 over 1948. The tax levy, which provides the bulk of the school income to support the budget, calls for $96,732,292, or a decrease of $239,932 from the 1948 levy. No wage increases for the city's 14,000 teachers and 6000 other school employees are included in the budget.

► Savannah, Ga. The school board has adopted a budget calling for an expenditure of $1,985,478 in 1949.

► Pueblo, Colo. The school board of Dist. No. 60 has adopted a budget of $2,104,344 for 1949, which is a net increase of $289,056 over 1948.

ECONOMY IN SCHOOL BUILDINGS

(Concluded from page 43)

tractor and each subcontractor realizes that strenuous efforts at economy have been made; and specific economies should be pointed out. If you don't explain clearly what your economies are, what benefit? The contractors won't figure them in if they don't know. They will just make a bigger profit. We have found it a good practice to insert in our specifications, in a conspicuous place, a sheet on "economy," pointing out specific economies, in addition to a general discussion of our efforts.

We don't expect everyone to agree with all we have pointed out here, but if these remarks have stimulated an interest in economy, they will have served their purpose. We must only realize that cutting costs is not impossible; it just takes a little longer, and more effort. Anyone can do it if he consistently works at it.

PERSONAL NEWS

► DR. ARTHUR B. MOEHLMAN has resigned from the staff of the "Nation's Schools," after a service of 16 years as editor.

► The school board of Houston, TEX., has appointed four new supervisors. These include MISS ALBERTA BAINES, supervisor of English and social studies in high schools; ORRIS G. BAILEY, supervisor of science and mathematics; MISS CECILE FOERSTER, supervisor of elementary grades; and LOUIS HIGGINBOTHAM, supervisor of commercial subjects.

► DR. JOHN L. TILDSLEY, former associate superintendent of schools in New York City, and a member of the school system for forty years, died in a hospital at the age of 81. He was appointed in 1897 and served successively as teacher, first assistant, principal, and associate superintendent.

► CLIFFORD WOODY, widely known professor of education at the University of Michigan, died suddenly at Ann Arbor on November 20, at the age of 64. He was the author of many textbooks and articles on education, and was responsible for the development of the Woody arithmetic and reading tests.

► DR. RICHARD ASPINALL, of Morgantown, W. Va., has assumed his duties as superintendent of schools at Mooseheart, Ill.

► HUMBERT PHELPS has assumed his duties as superintendent of the newly organized Norris City Community School Dist. No. 3, Norris City, Ill.

► ARCHIE COLE has been elected superintendent of schools at East Greenwich, R. I., to succeed Thomas B. Langley.

► FRANCIS R. SCHERER, superintendent of buildings for the Rochester, N. Y., board of education, has been made a member of the New York State School Buildings and Grounds Council, an advisory group set up by the state board of education.

► MRS. KENNETH ROBERTS has been appointed secretary of the school board at Prairie City, Iowa.

► The school board at Bridgeport, Conn., has reorganized with FRANCIS P. DUNIGAN as president; EARL A. BENSON as vice-president; and GEORGE A. NICHOLS as secretary. New members of the board are PAUL H. CULLINAN, FRANK S. MCGEE, and EARLE A. BENSON.

► WILLIAM A. DEWEES has been elected president of the school board at Waterloo, Iowa, to succeed the late Charles S. McKinstry. He will serve until the annual election next March.

► D. V. MOREHEAD has been elected president of the new Norris City Community School Dist. No. 3, at Norris City, Ill.

► DR. RALPH O. BOWDEN has been appointed a member of the school board at Savannah, Ga.

► STEWART R. ESSEX has been elected chairman of the school board at East Greenwich, R. I., to succeed MRS. Faith L. Palmer.

► MRS. RUTH J. PIERCE, elected chairman of the Barrington, R. I., school board, is the first woman to serve as head of the board. MRS. FLORA HULL has been re-elected as clerk.

MOUNT PLEASANT'S NEW FUNCTIONAL SCHOOLS

(Concluded from page 39)

school the monotony of room design will be broken. Each room has its own lavatory facilities. A real fireplace in the attractive lobby further adds to the homey atmosphere. Two-tone chimes have replaced the old-fashioned bell and buzzer.

Each room is a complete unit with all the necessary facilities so that a teacher may be responsible for the education of the whole child. The basic unit consists of a classroom proper with bay, a work alcove, and an outdoor covered work space. Flexibility has been achieved by making walls between classrooms nonbearing, appending the bays, and having most of the cabinet movable. The outdoors is considered an important part of the learning environment; consequently, pupils are able to look outdoors through large windows banking the entire side of each classroom. In addition, ample use has been made of glass block. Each classroom has a direct exit to the covered work space and school grounds. There is ample classroom storage space with three large closets, storage under the window seats, and large bookshelves. One closet is especially designed for all sizes of paper. All shelves are adjustable.

Each room has a boys' and a girls' lavatory; a specially designed wash fountain, equipped with a drinking fountain, has been placed in the classroom proper so teachers can encourage the washing of hands.

All ceilings are of acoustical tile, walls of concrete block and tile, and floors are of asphalt tile. Each room has a different beautifully executed floor pattern and the designs of the quarry tile floors in the outdoor work spaces and entrances are all different in order to stimulate the imagination of children.

Instead of blackboards, each room is equipped with one large section of delicate pastel colored crayon board and two reversible sections that can be used as easels. Soap crayon is used instead of chalk. These boards are not only easier to read but chalk dust in the room is eliminated. In addition, tackboard space is provided over each crayon board and on one wall. Cork strips have also been placed in the corridors and cork squares in the lobby for displaying pupils' work. Attractive display cases, one of which may be seen from the outside as well as from within, give ample space for displaying special projects.

Since funds were not available to build the cafeteria-assembly-playroom unit, the large, spacious lobby will serve as an assembly and playroom for the present. Eventually, the lobby will be of the hotel-type and contain a public office and nurses' quarters. At present the teachers' room is being shared with the school nurse. A private office with a communicating door to the teaching principal's classroom is the only other auxiliary room.

The artificial lighting is indirect incandescent and is on three separate circuits. The buildings are heated by oil-fired low pressure boilers. Each room contains a unit ventilator, and all windows are banked by fin type radiators. In addition, a pipe trench under each bay adds some heat to each room.

There is no excavation except the boiler room and pipe trenches. The construction cost of each building was approximately $325,000 or a cost per cubic foot of about one dollar.

Mount Pleasant Special School District is a rapidly growing suburban area just north of and adjacent to the City of Wilmington, Del. With a P.T.A. membership of over 1500 the parents have been instrumental in making these new buildings possible. Robinson, Stanhope, and Manning of Wilmington, Del., were the architects and A. J. Taylor of Delaware School Auxiliary Association was consultant.

PERSONAL NEWS

► JOHN E. MARSHALL, director of schoolhouse planning for the West Virginia State Department of Education, has been elected building administrator of the Massachusetts Building Assistance Commission in Boston.

► EUGENE BLOOMBERG has been appointed as a member of the school board at Woodhull, Ill., to succeed Evan Lee. He will serve until the next election in April, 1949.

► DR. MILTON J. GOLD has been appointed to the staff of the State Department of Public Instruction of Washington. Dr. Gold, who assumed his duties in the office November 15, is in charge of the supervision of the curriculum.

LONG-RANGE PLANNING OF SCHOOL PLANTS

(Concluded from page 28)

grounds and athletic fields. Because of a lack of long-range planning in this regard, we find the play areas too small and the athletic field too far removed from the gymnasium dressing rooms and showers to be easily accessible.

The current school news reveals that many projected school buildings are in the blueprint stage and in the files of the state education agencies because the planning has included the buildings only and has omitted consideration for financing. Quite obviously, a building in the blueprint stage is not contributing to the housing of children. Long-range planning must include every aspect involved in the process or it is worthless.

A review of the economic changes of the past two decades reveals the necessity of a flexible plan of financing an expanding program. During the twenties, it was difficult to approve any plan of financing, except by long-term serial bonds on the theory of "let the people whose children will be using it pay for the building."

The restrictions of present legislation make such procedures impossible, but they make building by units all the more important. Satisfactory unit construction requires (1) consideration of the ultimate plant as serving a balanced educational organization; (2) a complete physical whole in which all elements of the relation of instructional rooms, administration, mechanical services, etc., are anticipated and provided for; (3) an architecturally satisfying and dignified whole. Temporary solutions of needs and expedients of all kinds must be avoided as uneconomical.

A serious mistake is being made by school boards who are delaying indefinitely needed construction in the vague hope that federal or state subsidies will be made available through legislation. Children should not be housed in overcrowded, inadequate, or unsafe buildings until an economic slump causes Congress to act. In such cases, it would be much better to get started, do something, provided what is done is contributing to the over-all and ultimate needs of the district.

To argue that nothing can be done because a comprehensive building cannot be completed at one time is fallacious. Very few of our great industries could have been developed if they had waited for the time when they could erect a complete plant. The building of the first unit of a school plant may and can result in improved later units without violating the principles stated earlier in this article.

The point of view of this writer is that school authorities should lose no time in starting with initial surveys, determining ultimate needs, and providing for the same by school building units which will fit into the complete picture. He urges too a balanced procedure in meeting the needs and the financing by such means as are currently available. It is highly important that those responsible for the planning shall think of education as a vital program to meet the basically continuing and the incidentally changing needs of the individual and of society. If boards of education, superintendents, and architects accept this concept in long-range planning of school plants, we shall soon be developing more buildings of the open type, providing for internal flexibility, and of easy adaptation to future needs.

► DR. HAROLD G. THOMPSON, who had directed the New York state-wide program of Regents examinations for the past ten years, retired on January 1 from his position as director of the State Department's Division of Examinations and Testing. Dr. Thompson had served the State Education Department for nearly 25 years and had been engaged in educational work for more than 35 years.

► DR. MARTIN DAVID JENKINS has been inaugurated as seventh president of the Morgan State College of Baltimore, Md. The inauguration ceremonies were held in the Douglas High School Auditorium of Baltimore on December 17.

NEW SUPPLIES AND EQUIPMENT

AMPRO PRICE REDUCTION ON SILENT PROJECTOR

The Ampro Corporation has announced a price reduction on the Imperial 16mm. silent projector, which went into effect November 1, 1948. While the price was reduced from $276 to $199.50, there is no change in the features or the quality of the Imperial. Every feature, including the Cordomatic, the swing-open film gate, and the 750-watt lamp are retained at the new lower price.

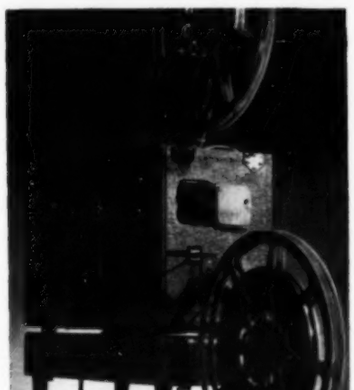
Ampro Corporation, 2835 N. Western Ave., Chicago 18, Ill.

For brief reference use ASBJ—101.

NEW SOUND KODASCOPE FB-40 PROJECTOR

The most powerful of Kodak's line of 16mm. sound projectors, the Sound Kodascope FB-40 Projector, is again offered by the Eastman Kodak Company.

The new projector has been reinstated to meet the needs of those who require a powerful projector for sound films for instruction, training, or entertainment of large groups. It is simple to



Eastman's Sound Kodascope FB-40 Projector.

operate and control, and produces large, clear, smooth-running movies without distorted sound from film track, records, or microphone. It has a full 40-watt capacity, is supplied with a built-in fidelity control permitting accurate focus, and a twin 12-in. speaker unit which is capable of handling the 40-watt output provided by the amplifier. A feature of the projector is the twin jacks, with separate controls to permit a phonograph or microphone recording. As an added feature, the sound system may be used for public addresses. The projector, complete with twin speaker unit, Ektanon 2 in. f/1.6 lens, and 1600-foot reel, sells for $855.

Eastman Kodak Company, Rochester 4, N. Y.

For brief reference use ASBJ—102.

ANNOUNCE 1949 ENCYCLOPEDIA BRITANNICA FILMS SCHOLARSHIP CONTEST

Encyclopedia Britannica Films, Inc., has announced the 1949 films scholarship grants, to be awarded to universities on a rotating plan.

A selection board, headed by Dr. Floyde E. Brooker, has been appointed to choose the universities and colleges who are to be the recipients of the fourth annual tuition scholarship grants. These institutions, in turn, will select the applicants who will receive the audio-visual tuition awards for study next summer. Universities and colleges interested should get in touch with Mr. Brooker, chairman visual-aids section, U. S. Office of Education, Washington 25, D. C.

Encyclopedia Britannica Films, Inc., 1150 Wilmette Ave., Wilmette, Ill.

For brief reference use ASBJ—103.

NEW HANDWRITING STENCIL SHEET

A new handwriting stencil sheet, just announced by A. B. Dick Company, is designed especially for use by teachers. With this new product, stencils for the production of lesson sheets, tests, and other classroom needs can be written by the teacher, and as many copies as necessary produced on the mimeograph. Freehand illustrations and lettering can also be drawn on these sheets, and the stencils can be filed and rerun when needed. Also available are special stencil sheets for production of mimeographed newspapers and bulletins, folders, and mailing list addresses.

A. B. Dick & Company, Chicago 6, Ill.

For brief reference use ASBJ—104.

NEWS OF THE MANUFACTURERS

NEW GUIDE TO PROPER DAYLIGHTING

A 16-page booklet on the control of natural daylighting through the use of functional glass-block fenestration has just been announced by the Pittsburgh-Corning Corporation. This booklet describes in detail the proper selection of glass block and its usage for light direction and diffusion. Featured is the PC Nomograph for estimating illumination levels. The topics covered are daylight control, types of functional blocks and uses, brightness data, light transmission and distribution, and typical installations of functional glass block. A complete technical data section is included, as well as detailed instructions for the selection of the right pattern of glass block for a wide variety of daylighting needs.

Pittsburgh Corning Corporation, Pittsburgh, Pa.

For brief reference use ASBJ—105.

NEW DICK NO. 435 MIMEOGRAPH

The A. B. Dick Company, manufacturers of mimeograph machines and supplies, has announced a new Model 435 Mimeograph and a new type of mimeograph ink. Both these products are designed to reduce labor costs by shortening the over-all duplicating cycle. The mimeograph has a built-in motor and is attached to a new low stand with foot control for sitdown operation. It may be used as a table model without the stand. The new ink dries upon contact with most papers, which eliminates interleaving and reduces the time required for production of copies.

A. B. Dick Company, 720 West Jackson Blvd., Chicago 6, Ill.

For brief reference use ASBJ—106.

NEW FENESTRA HOLLOW-METAL ENTRANCE DOOR

A new design in Fenestra stock, hollow metal entrance door has been announced by Detroit Steel Products Company, makers of Fenestra building products. The door which comes in one standard size, 3 ft. by 7 ft., may be used in single

New "Fenestra" Metal Door.

or double openings, supplied with a standard cylinder lock, bronze push and pull bars, and bronze ball-bearing hinges. The door is constructed to hinge right or left, and to swing in or out. It is furnished complete with frames and hardware machined, fitted, and ready to assemble.

Complete details and specifications are available by writing to *Detroit Steel Products Co., 3167 Griffin St., Detroit 11, Mich.*

For brief reference use ASBJ—107.

JOHN D. ROSEBROUGH APPOINTED

The Herman Nelson Corporation, Moline, Ill., has announced the appointment of John D. Rosebrough as manager of the company's St. Louis office. Mr. Rosebrough who is in charge of sales of unit heaters, unit ventilators, propeller fans, centrifugal fans, and unit blowers, is located at 611 Olive St., St. Louis, Mo.

The operation of Johnson Service Company's automatic temperature control as applied to schoolroom unit ventilators was demonstrated at the Illinois School Board Convention, Chicago, November 14-16.

THE SCHOOL BOARD MEMBER

Charles W. Motz[1]

Let me live in a house on a city street,
Where the school children I see;
Some who are good, and some who are bad,
The same as you and me.
Some with a doleful, downcast look,
Others vivacious and gay.
For, though the same sun shines on both,
For many life's skies seem gray.
Let me live in a house on a city street
And forever scheme and plan,
To give what I've got to improve the lot
Of this future woman and man.
To create a world that is free from war
And a specter of only the past.
Where true education throughout every nation
May write the peace that will last.

[1]Member of Board of Education at Rock Island, Ill.

No Secret at All

A New York teacher has achieved quite a measure of fame for her ability to handle a class of junior high school students in one of the more "difficult" areas of New York's Harlem. When asked about the secret of her methods she said: "Secret? I guess it's just because I am color blind."

Her Genealogy

Vice-Chancellor Harold O. Voorhis, of New York University, in a recent address, told the following story:

A lady of newly acquired wealth but uncertain background decided to have a genealogy written for her own glorification. She called in a competent genealogist, who before long, discovered a skeleton in the family wardrobe in the person of a certain Uncle John who had been electrocuted for murder. When the investigator confronted the good lady with this awkward situation, she told him hotly to handle it the best way he could but never on any account to reveal the truth. Much concerned lest he be not paid for his services, he came out with the statement: "Uncle John was a rare old man, an educator of sorts whose very life was a lesson. He occupied with firm support the chair of electricity in one of our more prominent institutions, and died in the harness."

PERSONAL NEWS

► Oscar C. Bock has been appointed business manager for the board of education at Alton, Ill. As business manager Mr. Bock will be in charge of the purchase of supplies and will head the accounting department.

► Dr. Raymond J. Fay has been appointed educational consultant for the State Department of Education of Connecticut. The consultant will meet with groups of citizens, board members, teachers, and superintendents.

► Mrs. Ann McGuinniss Ahern has been appointed reading consultant for the schools of West Hartford, Conn.

► Paul V. Fegley, of Hurst, Ill., has been elected superintendent of schools at Amboy, to succeed O. W. Funkhouser.

► Frank D. Hess, former superintendent of schools at Drumright, Okla., died recently following a heart attack. A. C. Wiemer has succeeded Mr. Hess as superintendent.

► Walter Pfoetz, of Westfield, Wis., has accepted the superintendency at Phillips, where he succeeds F. W. Heath.

► The school board of Middletown, Pa., has reorganized with E. Dale Bachman as president, and Harvey V. Hoerner as vice-president.

► Dr. Raymond Fay, of Meriden, Conn., has been appointed educational consultant in the State Department of Education, to succeed the late Daniel T. Nolan. Dr. Ina Sylvanus, of Jersey City, was named supervisor of rural education in Rockville, Somers, Ellington, Andover, and Columbia.

Advertisers Products and Services

Advertisers in this index are given a code number in addition to the page number on which the advertisement appears. Refer to the advertisement for product or services available. Write direct to advertisers or use the coupon in requesting information from a number of advertisers.

The advertisements in this issue have been given a code number for your convenience in requesting information on products, services, booklets, and catalogs offered. Encircle the code number of the advertisement in which you are interested, clip and mail the coupon to THE AMERICAN SCHOOL BOARD JOURNAL. Your request will receive prompt attention. BRUCE-MILWAUKEE.

THE AMERICAN SCHOOL BOARD JOURNAL 1949
540 North Milwaukee St., Milwaukee 1, Wis.

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Which is True Diffusion?

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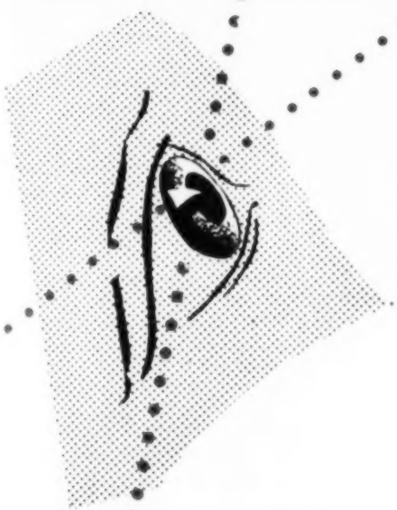
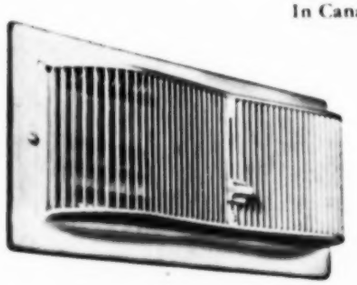
CONVENTIONAL REGISTER



YOU be the judge. It's not necessary to tell you that the photograph at the left is a smoke pattern cast by the Honeywell Air Diffusion Register, and that the one on the right is that disbursed by the conventional type of forced air register.

These actual unretouched photographs (except for blacking in the base and pointing up the registers) were taken under room conditions and show exactly how air is diffused from each type of register. Standard factory vane settings were used. Instead of disturbing air blasts with drafts and cold spots, the unique design of the Honeywell Register diffuses a gentle, even blanket of air to every corner of the room. In the classroom this means the same, even comfort conditions for every pupil, with never one row too hot and the next too cold.

In addition to improved performance with Honeywell's Air Diffusion Register, you gain the advantage of drastically reduced installation costs. Soil streaks on walls and ceilings are eliminated. That means less frequent cleaning and decorating. And in appearance, the register is smart, modern. You'll want all the facts about this remarkable new register at once. Phone the Honeywell branch in your city or write Minneapolis-Honeywell, Minneapolis 8, Minnesota. In Canada: Leaside, Toronto 17, Ontario.



MINNEAPOLIS **Honeywell**

CONTROL SYSTEMS

72 BRANCHES FROM COAST TO COAST WITH SUBSIDIARY COMPANIES IN: TORONTO • LONDON • STOCKHOLM • AMSTERDAM • BRUSSELS • ZURICH • MEXICO CITY

We've PROVED Its Safety! Its Economy! Its Endurance!

Al Esper Chief of Test Drivers, Ford Motor Company, Says

"Our job is to make sure that every part of every Ford chassis tested by us measures up fully to the performance standards set for it—and Ford engineering sets those standards plenty high! We've 'given the works' to these 1948 chassis," said Mr. Esper. "We KNOW because we've PROVED they're tops in Safety, Economy and Endurance!"

School Bus Body by
Wayne Body Works, Richmond, Indiana

Let your Ford Dealer show you the advanced *Endurance-Engineering* in the new Ford *Bonus Built* School Bus Safety Chassis! Two great, new, extra-thrifty Ford engines to choose from —V-8 or Six. Every wanted safety feature—extra strength—new spring comfort—new steering ease—added stopping ability.

You'll settle the School Bus question for long years to come by settling on Ford—the Long-Life Champion.

**Webster's Dictionary definition of word "Bonus"—"Something given in addition to what is usual or strictly due."*

FORD *Bonus* Built* **SCHOOL BUS** *Safety* **CHASSIS**

Contract Operators, Schoolmen, Agree on Ford Economy in School Service

"FORDS FOR EASY, LOW-COST UPKEEP"

"Sixteen of our forty-one school buses at this writing are Fords that have given us as much as 100,000 miles of service. We are thoroughly satisfied. Our mechanics find maintenance work easier."

—H. A. Haden, County Executive, Albemarle County, Va.

"120,000 MILES BEFORE ENGINE REPAIRS"

"Our service with Ford school bus chassis has been very satisfactory. We have operated many of them well over 100,000 miles with repairs and maintenance very low. The engine in one was driven 120,000 miles before any repairs were necessary."

—Richard Klickert, Klickert Bus Lines, Chicago Heights, Illinois

"FORDS FOR 14 YEARS . . . UNUSUAL SERVICE"

"We are justly proud of the six new Ford buses we added last year. For the past 14 years Ford buses have rendered us unusual service—long life, low upkeep and endurance."

—A. B. Whitehead, President Board of Trustees, Ind. School District, Minden, Texas